Scientific American.

A JOURNAL OF PRACTICAL INFORMATION IN ART, SCIENCE, MECHANICS, AGRICULTURE, CHEMISTRY, AND MANUFACTURES.

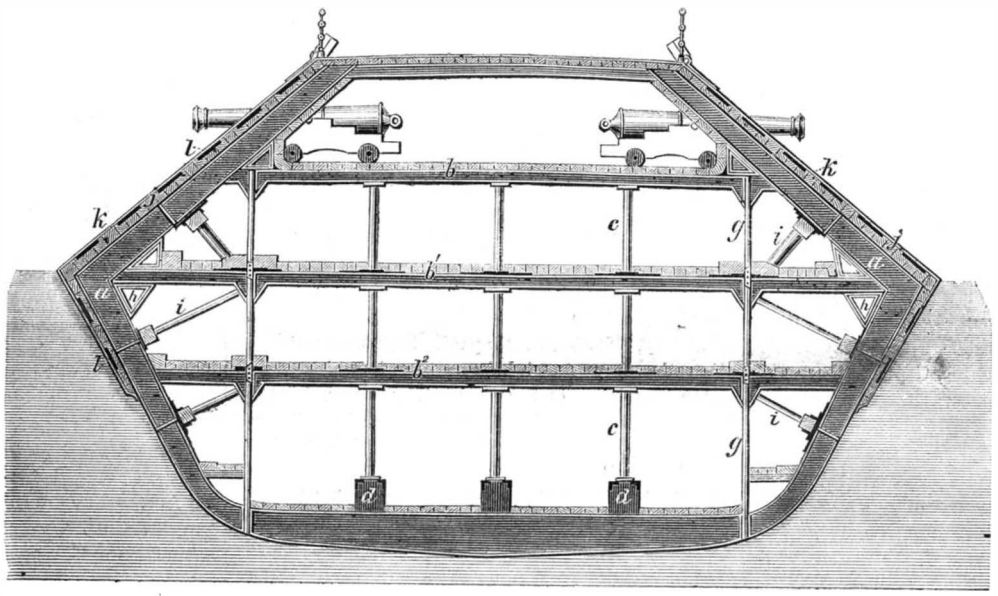
VOL. V.---NO. 15. NEW YORK, OCTOBER 12, 1861. NEW SERIES

Angulated Principle of Shipbuilding.

On the 21st of August some experiments were made at Portsmouth, England, under the superintendence of Captain R. S. Hewlett, C. B., to test Jones's plan of constructing iron-plated ships with sloping sides. A target was constructed similar to the size of a ship, and fired against with an Armstrong gun, carrying a bolt 12 inches in length, and 7 inches in diameter, and weighing 110 lbs. The London *Times* makes the following remarks in regard to the experiment:—"It happened that everything was favorable to the accuracy of the experiment. The gun was one of the heaviest in use, throwing a bolt of 110 lbs. —the very kind of projectile which had smashed the Shoeburyness butts into fragments. The firing took place at 200 yards' distance, and the practice was most perfect. The shots hit the target so truly that if it could have been penetrated at all they must have pierced it. Six bolts actually struck the armor within a space of twenty-one inches by twelve, and three of these fell within an inch or two of the same spot. Thus the critical test of a succession of blows at the same point was thoroughly applied, and it does not seem, indeed, as if any shield could ever have been battered with more tremendous force. The effect produced, however, was comparatively insignificant. The last shot of all, though lighting just on the track of the others, and giving, as it were, the last blow to the work, failed to penetrate the armor, and, as a general result, it was found that, though no fewer than sixteen shots had been planted more closely together than could ever be expected under ordinary conditions of practice, the plates were not pierced nor was the woodwork materially injured. The final shot, says the report, fell 'on Nos. 15 and 3, carrying away the armor plates in irregular pieces between shots 15, 22, 3, 21, 11, 7, crushing the surface of the twelve-inch wooden backing, but not in any way breaking through the same or damaging the shell of the vessel in the slightest degree.'

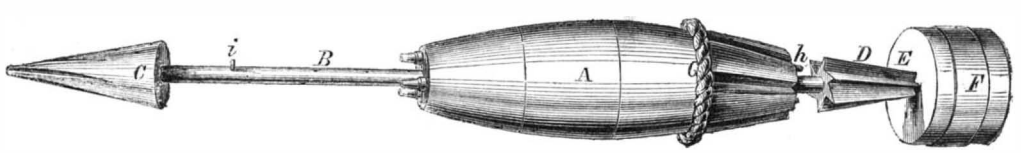
"Such results certainly seem to open a new system of shipbuilding, for we do not see how it is possible to qualify them or explain them away. The attack had the fairest possible chance. The shots of the most powerful piece of ordnance in use were delivered one after another with extraordinary accuracy, and yet we are assured that they failed in reaching the woodwork through the iron plating. It follows, therefore, that if there should be no other objection to Mr. Jones's principle, we have found a way of making men-of-war shot proof."

The London *Mechanics' Magazine* says:—"The target with which the experiments were made, was constructed on the principle of Jones's new mode of building ships, for which a patent was taken out last year. The patentee says the invention has for its object improvements in shipbuilding, and is applicable in the construction of ships for the purposes of war, which are required to be shot proof. For this purpose I so construct the ribs or framing of the ship that the sides or ends of the ship formed when the ribs or framing is plated or planked over shall be considerably inclined; and on to such inclined sides I afterward fix thick protecting plates of metal; by thus combining thick protecting plating of metal with a ship, the sides and ends of which are considerably inclined, a structure is obtained which will resist shot much more effectually than the floating batteries hitherto constructed, in which the sides being vertical, or nearly so, the thick protecting plates with which they are coated, have to resist the full force of the shot, which is not the case in ships or batteries constructed according to my invention, as the inclination of the sides is such that the shots striking in a horizontal or nearly horizontal direction, glance off from them. Any inclination may be given to the sides which is sufficient to cause a shot striking horizontally to glance from them; but I consider it best to place them at an inclination such as is shown in the drawings hereunto and which are herein-after described. I prefer that the sides of the ship should incline outward from the center line of the ship until they rise up to the water line; also, that at this point they should make a sharp angle, bend or round, and from this point upward that they should incline inward toward the center line; the sides may, however, incline inward toward the center line from a point below the water line, or they may rise above the water line while still inclining outward, and afterward incline outward, so that the angle bend shall be above the water line.



JONES'S ANGULATED PRINCIPLE OF SHIPBUILDING.

The engraving represents a midship section of the ship. *a* is one of the ribs of the ship, it is, in fact, a curved beam of wrought iron; the web or center portion of the beam is of plate, and the flanges of the beam are formed by riveting angle iron to the web; *b*, b^1 and b^2, are deck beams, firmly fixed to the rib, *a*, which they serve to support; the beams are carried intermediate of their length by pillars, *c c*, of which the lower tier rests on the three hollow beams, *d d*, built up of plate and angle iron, as shown. The ribs, *a a*, are connected together by the external skin or plating from the point, *e*, to the point, *f*, which forms the floor of the ship, and further, by the longitudinal bulkheads, *g g*, which are constructed of a frame of angle or T-iron plated over these bulkheads, strengthen the ship longitudinally, and being water-tight, they would secure the safety of the vessel, even should the sides be so shaken by shot, or otherwise, as to create an amount of leakage which would otherwise be dangerous; the other plates and angle irons, also run continuously from end to end of the structure, and are principally intended to give the necessary longitudinal strength; *h h*, are triangular frames employed in order to strengthen the main frame at the points where the ribs, *a a*, and the deck beams, *b*, are connected together; *i i i*, are pillars or supports, which serve to give greater stiffness to the frame; *j j j*, are baulks of timber, bolted to the exterior of the ship; and *k k* are massive protecting plates, usually of wrought iron, but they may advantageously be of steel, when it can conveniently be obtained in plates of sufficient size. To prevent the ball hurting the edge of the armor plates, strips of armor plates are placed behind, and which, when secured to the armor plates, will convert the same into stringers, materially strengthening the vessel; these plates are shown at *l l*. The decks of the ship are of timber, the floor also is coated with timber, and timber is employed in some other parts.



BROWN'S IMPROVED PROJECTILE.

Improved Projectile.

When an inventor gets a new idea in mechanism it is curious to see to how many uses he can apply it. Some years since we illustrated a sounding apparatus invented by Capt. Charles F. Brown, of Warren, R. I., and we have since procured patents for several contrivances by the same inventor, in which

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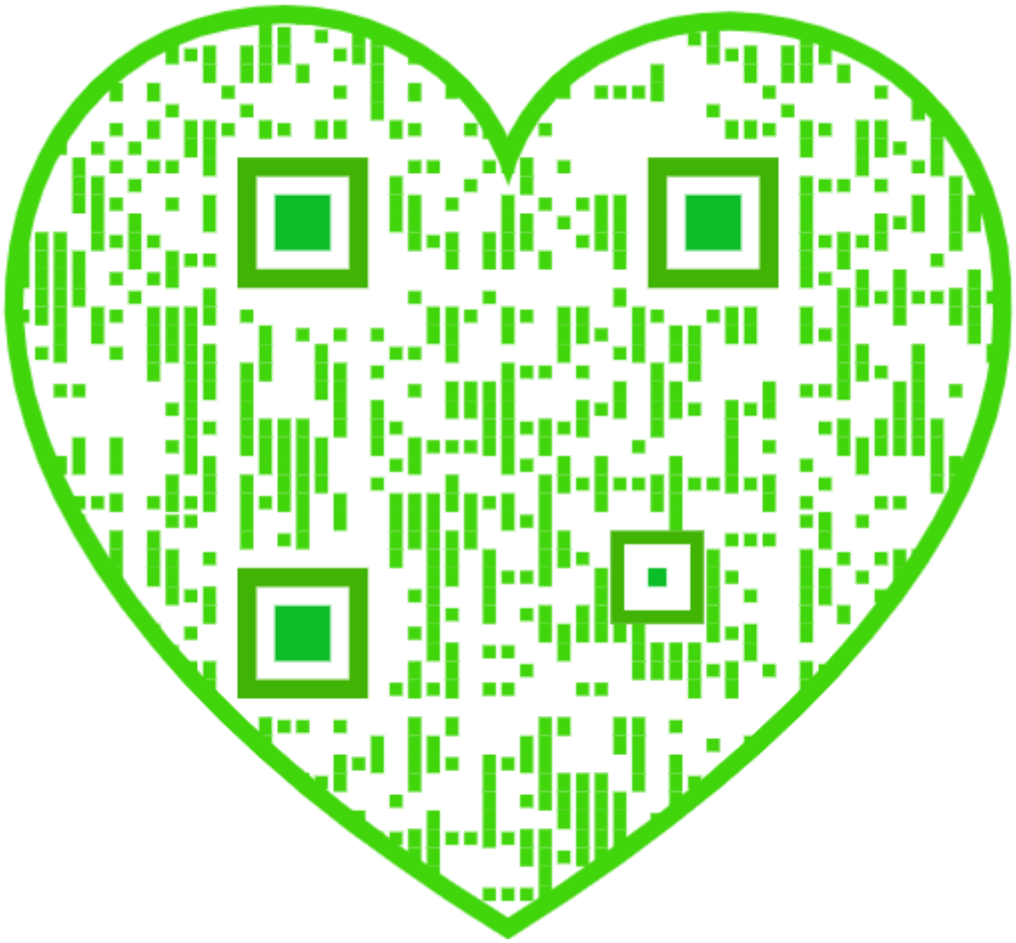

the same idea was employed. We now have it reappearing in the form of a projectile, which is illustrated in the accompanying engraving.

The object of the invention is to prevent the projectile from preserving its axis parallel with the axis of the gun throughout its flight, and to make the axis of the projectile conform with the line of flight, so that it may strike directly upon its forward end.

The body, A, of the projectile is made of cast iron in the form of a prolate spheroid, truncated at both ends, as shown, with a hole through its axis in which the rod, B, slides freely. The rod, B, has a solid head, C, and a tail-piece, D, which latter may be hollow, and both the head and tail-piece are groved in spirals corresponding with the twist in the riflings of the gun. A wooden sabot, E, with a band, F, of copper or other soft metal, is driven upon the point of the tail-piece, D, before the projectile is introduced into the gun, and at the discharge this sabot is forced forward upon the tapering point, thus expanding it and causing it to fill the grooves of the rifle and close the windage. A grummet, G, around the body of the projectile also aids in closing the windage.

A pin, *h*, projects from the body of the shot, and enters one of the grooves in the tail-piece, D, thus imparting to the rod the rotary motion of the projectile; this motion being assisted by the action of the air upon the spiral grooves.

When the projectile is used as a shell it is charged with powder through a hole in the side, and the hole is then closed with a screw. Nipples are inserted into the forward end of the shell for the reception of percussion caps, which are exploded when the shell strikes against any object by coming forcibly in contact with the shoulder on the head, C. To prevent the caps from striking against this shoulder on any accidental dropping of the projectile, a pin, *i*, is inserted in the rod, B; this pin being of such size that it will be broken by the force of the projectile striking with the velocity that it has when fired from a cannon.

The patent for this invention was procured through the Scientific American Patent Agency, Oct. 1, 1861, and further information in relation to it may be obtained by addressing the inventor, Captain Charles F. Brown, at Warren, R. I.

THE WAR.

No event of great importance has occurred since our last issue.

THE SURRENDER OF COL. MULLIGAN.

We have accounts of the mode in which Col. Mulligan's command was cut off from supplies of water and thus forced to surrender. It seems that he was intrenched on a hill near the river, and the secessionists rolled bales of hemp along the bank so as to protect themselves from Col. Mulligan's fire, and thus secured positions from which they could safely shoot down any of the Colonel's men who should attempt to go to the river for water. The surrender was a terrible blow to to the Union cause in Missouri, and is said to have added largely to Gen. Price's forces. Gen. Fremont is said to be making exertions to concentrate his forces for the purpose of attacking Gen. Price, but there seems to be very great danger of the several detachments of the Union forces in Missouri being cut to pieces in detail before they can unite.

AFFAIRS IN KENTUCKY.

Gen. Pillow at last accounts remained with a large body of secession troops at Columbus, though there were rumours that he had commenced his march for Paducah, on the Ohio, with the intention of attacking the Union troops at that place.

THE SECESSIONISTS BEFORE WASHINGTON FALLING BACK.

The advanced posts of the secessionists before Washington have been withdrawn, and their places occupied by the Union troops.

THE POTOMAC CLOSED.

The secessionists have been for some time erecting batteries of cannon in the forests along the southwest bank of the Potomac below Washington, and on Thursday the 26th of September, these batteries were unmasked, and the Potomac is regarded as closed. This cuts off direct water communication between Washington and the sea, though there is railroad communication between Washington and the Chesapeake Bay, by the way of Baltimore, 38 miles, and by the way of Annopolis, 39 miles. As the batteries of the secessionists are armed with rifled cannon of long range, it is not certain that our vessels will be able to approach near enough to them do drive out the garrisons by means of shells. The rifled cannon in the batteries carry entirely across the river, but if the large guns of the navy have longer range, the vessels can lie above or below the batteries and shell out the garrisons in safety.

FROM FORT PICKENS.

We have news from Fort Pickens to the 21st of August. The health of all the troops continued remarkably good. On the 14th, a boat expedition from the fleet succeeded in burning the privateer *Judith*; which was lying under the protection of the guns of the secessionists at the Pensacola Navy Yard. The dry dock too had been destroyed by the garrison of the fort to prevent its being sunk by the secessionists in the channel.

HOPES FOR THE FUTURE.

Macaulay, in summing up the great qualities of Milton, concludes the list with the crowning virtue of "his sublime and majestic patience," and the curse which Goethe's Faust hurls in impotent rage against the virtues that he had found too strong for his wickedness to contend against, ends with the denunciation, "and especially be thou damned, Oh Patience!" Let us all summon this great quality to our aid, while we wait in the hope that the long record of disaster which has marked the history of this war will soon be changed to brilliant and continued victory.

The "Atlantic Monthly" on Panics.

We have received from the publishers, Messrs. Ticknor & Fields, of Boston, the October number of the *Atlantic Monthly*, and find it one of the best numbers yet issued of this able and readable publication. There are several articles adapted to the times, but we have been most interested in that entitled "Panic Terror," as it proves by a long series of historical citations the truth of the statement that we have made, that the armies of all nations have been very subject to panics similar to that which occurred at Bull Run. The writer begins with the birth of *Pan*, the ugly favorite of *all* the gods, and traces down the stream of history, showing that "panics have taken place in all armies, from that brief campaign in which Abram smote the hosts of the plundering kings, hard by Damascus, to that briefer campaign in which General McDowell did *not* smite the secessionists, hard by Washington."

Panics have been almost as numerous as battles, and have taken place among the veteran soldiers of all nations, Hebrew, Persian, Greek, Roman, Carthagenian, Spanish, French, Austrian, Prussian, Dutch, Russian, English, Scotch and Irish. After citing cases in all of these nations, and dwelling with peculiar unction upon the numerous panics which have occurred in *English* armies, our author closes with these words:—

It would be no difficult task to add a hundred instances to those we have mentioned of the occurrence of panics in European armies; but it is not necessary to pursue the subject farther. Nothing is better known than that almost every eminent commander has suffered from panic terror having taken control of the minds of his men, and nothing is more unjust than to speak of the American panic of the 21st of July as if it were something quite out of the common way of war. True, its origin has not been fully explained; but in this point it only resembles most other panics, the causes of which never have been explained and never will be. It is characteristic of a panic that its occurrence cannot be accounted for; and therefore it was that the ancients attributed it to the direct interposition of a god, as arising from some cause quite beyond human comprehension. If panics could be clearly explained, some device might be hit upon, perhaps, for prevention. But we see that they occured at the very dawn of history, that they have happened repeatedly for five-and-twenty centuries, and that they are as common now in the nineteenth Christian century as they were in those days when Pan was a god. "Great Pan is *not* dead," but sends armies to pot now as readily as he did when there were hoplites and peltasts on earth. We can console ourselves, though the consolation be but a poor one, with the reflection that all military people have suffered from the same cause that has brought so much mortification and so great loss immediately home to us. Our panic is the greatest that ever was known only because it is the latest one that has happened, and because it happened to ourselves. It is idle, and even laughable, to attempt to argue it out of sight. We should admit its occurrence as freely as it is asserted by the bitterest and most unfair of our critics; and we should recognize the truth of what has been well said on the subject, that the only possible answer to the attacks that have been made on the national character for military capacity and courage is *victory*. If we shall succeed in this war, the rout of Bull Run will no more destroy our character for manliness than the rout of Landen destroyed the character of Englishmen for the same virtue. If we fail, we must consent to be considered cowards; and we shall deserve to be so held, if, with our superior numbers, and still more superior means, we cannot maintain the Republic against the rebels.

A Fighting Clergyman.

Rev. B. C. Ward, pastor of a Congregational Church in the village of Geneseo, Illinois, conceives it to be his duty to forsake the pulpit for the field. He has received authority to raise a company of infantry, but proposes to enlist clergymen only. An appeal to his clerical brethren, published over his own signature, calls upon "the fighting stock of the church militant" to prove to the world their willingness to "seal with their blood what they have talked in their pulpits," and closes with this extraordinary passage:

"Much as we have said and done to prove our loyalty, we have not yet resisted unto blood striving against sin. Shall we now, at the call of Christ, come out from behind our velvet cushioned barracks, whence we have so often hurled bold, indignant words at the giant iniquity of the age, and meet it face to face with the hot shot of rifled artillery, with the gleaming bayonet, or with clashing sabers in a hand to hand encounter?"

"Parson" Brownlow, of Tennessee, has hitherto borne the title of the "fighting parson," but he has never gone so far as this Illinois clergyman, and Mr. Ward is clearly entitled to wear the honors.

Iron-Clad Frigates---Great Naval Expenditures.

The British government is expending vast sums of money in creating a new navy. At the close of the last session of Parliament an appropriation of £2,500,000 (about twelve million and a half of dollars) was voted for the building of new iron frigates of the class and dimensions described in the last number of the Scientific American. The above sum is provided for the building of five such vessels, and the contracts for three are already given out. It is stated by our foreign cotemporaries, that it will require a period of two years to finish them. When fully equipped and ready for active service, each will have cost about three million of dollars,—a prodigious sum for one single vessel of war. Modern warfare to be conducted upon the most improved—meaning the most destructive—principles requires a *long* purse. Twenty-five years ago a first class line of battle ship could be built for less than a quarter of a million of dollars, but steam frigates were "few and far between" in those days.

New Revenue Steam Vessels.

Proposals have been issued by the Treasury Department for the building of five new screw steamers, two of which are to be of 750 tuns burthen and three of 600 tuns, United States measurement. The draft of water on the load line of the largest must not exceed ten feet. They are to be armed with one rifled pivot gun of 8,000 lbs. weight, two 32-pounders and one heavy 24-pounder howitzer on the top-gallant forecastle.

The draft of the 600-tun vessel is not to exceed eight and a half feet; the armament is to be the same exactly as the others, with the exception of the pivot gun which is to be only 6,500 lbs. weight. Each steamer must be furnished with a condenser for distilling potable water from the sea.

Vessels Purchased by the Government.—The government has been making a number of purchases of vessels at this port, and at places in the vicinity, of late. One of these is the hull, built by Messrs. Simpson & Neill, of about 400 tuns burden, which was launched a month or two ago. It has been hauled to the Navy Yard, to be converted into a gun-boat, for which it is well adapted, except that it will have to depend altogether upon its sails. Another of the vessels bought is the hull upon the stocks at the yard of Williams & Son, foot of Queen street. This is about 500 tuns burden. Like the first described, it will be converted into a gun-boat. Several schooners are among the crafts bought, three of which are called *Rachael Seaman*, *Maria A. Wood and Samuel Rotine*, all of which, like the others, are to do service as gun-boats. The most costly of the vessels purchased is the iron steamship *St. Mary*, built at Wilmington, of about 1,100 tuns burden. She is a side-wheel steamer, and said to be built in a superior manner, with a powerful engine.—Philadelphia *Ledger*.

The button business at Waterbury is quite brisk. One firm has a contract in the army button line, which will take 18,000 pounds of brass metal. Large contracts for epaulets have also been given to parties from Waterbury, amounting to $100,000.

Small brilliant dioptric lights are used in all the French ports.

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An Ingenious Mechanic Devoting his Skill to the War.

On the occasion of a recent meeting of the citizens of Roxbury, Mass., at the armory of the Dearborn Guard, Thomas Taylor, an ingenious mechanic of that city, exhibited the operation of some of his war-like inventions to which we are pleased to direct attention as showing the importance of greater activity in this department when the needs of the government are so pressing.

The first experiment was a simple mode of igniting gunpowder by means of chemical combinations, and by this mode a number of charges could be ignited simultaneously. It consisted of a fine copper wire, of a green color, to imitate foliage, attached to mines or bomb shells, placed in the enemies' territory, and exploded by chemical connection. Another experiment was with the wire placed in a tube, under ground, and connected with an imaginary fort under which was a charge. Mr. Taylor caused it to explode in a mysterious manner, with a loud report, sending the fort and the secession rag upon it almost out of the window. The experiments of blowing up a fort and a bridge by means of a charge attached to a common rubber pipe or tube, were quite successful and received merited applause. This was done by his pneumatic battery, a new invention for use in mining and military operations. By this battery, powder can be ignited at a considerable distance, and with perfect safety to the operator. Mr. Taylor ignited powder at a distance of twenty feet, by gently blowing into this tube. He alluded to the English and Scotch wars, and referred to the latter routing an army of 130,000, when they had but 30,000 men. It was done wholly by stratagem, and our generals could do something in that way. He illustrated how easily a bridge might be destroyed while the enemy were crossing it, by means of a mine connected with his pipe; with his breath he could blow them up effectually.

The next experiment—and it seems a practicable one—was the throwing of a column of fire across a road designed to protect the flank of an army, thus preventing the advance of the enemy. This must be of great advantage, especially in a narrow pass or the like. The greatest piece of the evening, it seems to us, and the one of the most utility, was the *fuse*, so called. It is a nicely constructed piece of mechanism and an entirely new invention. He held it up to view. It was about two and a half inches long by a quarter of an inch in diameter. Having regulated the fuse, he placed it in a pail of water. It was set to four minutes, when it exploded. Mr. Taylor exhibited two more explosions by the fuse with perfect success. These last experiments drew forth much applause. This self-igniting fuse Mr. T. proposes to place in bomb shells to be thrown under gun boats or ships of war where they will explode and cause their destruction. The great advantage of this fuse, above all others, consists in the fact that it is self-igniting—that it is not affected by either air or water. Mr. Taylor stated in proof of its simplicity and safety that the fuse he held in his hand might be crushed under foot, and its materials again placed into another tube, and ready for action in a few moments. Their construction is such that concussion will not explode them.

By the use of the above inventions, which are all his own, Mr. Taylor designs to convey fire secretly to trains of gunpowder, for the purpose of destroying bridges, forts, mines, firing woods, gun boats, &c., and in a way entirely different from anything ever before attempted. Many military men were present, among whom was Gen. Stone, who seemed much pleased with the experiments, and at the close, made many inquiries and expressed the opinion that the fuse was something worthy the attention of those engaged in warfare.

The Camps on the Potomac.

An eminent physician, Dr. Wood, of this city, has recently visited the camps on the Potomac solely in a professional capacity, without any errand or official connection with the Sanitary Committee. He received a written pass and official recommendation from Gen. McClellan, and armed with this authority, was allowed to inspect hospitals, camps, and whatever else he chose. The conclusion at which he arrived is, that admirable order and discipline prevail throughout our armies; that the sanitary condition of our various regiments is excellent; that probably so large armies were never before in the field in such capital physical condition; that they are well fed, well clothed, well cared for every way; carefully and constantly drilled, and subjected to a rigid but welcome discipline; that the consequence of this is seen in the admirable spirit infused into both men and officers; the kind feeling prevalent among the various ranks; the absolute efficiency of the entire army; its complete confidence above all in McClellan, and its readiness for any emergency. He reports that wherever McClellan is seen shouts go up from all quarters, and follow him in every direction. He confirms all that has previously been said of Gen. McClellan's constant attendance to his own duties; sitting sixteen hours a day on his horse. He mentions the extreme difficulty of civilians to get into the camps, and illustrates it by the fact that during one entire day spent by him at Arlington Hights, Alexandria, and the places in their vicinity, he met but one party of civilians. The whole tenor of his remarks was most encouraging, and should have its influence with the public. It should assure those who have friends in the army of their good condition, and prompt those who are delaying, to enlist more rapidly. It should calm the public mind, and increase its confidence in those who have control of our military affairs.

Naval Preparations.

The new screw gun-boat *Unadilla* built in this city, fully armed and equipped, was put into commission on September 29th, and hauled out into the Bay ready for service. This is the first of the twenty-three new gun-boats described and illustrated on page 192 this volume of the Scientific American, completed and ready for action. Her consort, the *Ottawa*, will be ready in a few days. The contracts for these gun-boats were made on the 27th of June last; their hulls have been built; their engines constructed and fitted up; and they have been rigged, armed and supplied with stores in the short space of three months.

We counted eleven large steamers at the Brooklyn Navy Yard a few days ago. A very large fleet is at present preparing at this port, and it is currently reported that it will soon sail upon a secret expedition. The new gun-boats will be the most efficient vessels of this fleet, because they have been built expressly for the work they are commissioned to perform.

A Large Pontoon Bridge.—United States troops are now occupying the important town of Paducah, Ky., which is located on the Ohio river at the mouth of the Tennessee river. This town commands entirely the latter river, which is navigable for hundreds of miles through a region of boundless wealth. Barges for bridging the river at any point have been sent to that place from Cincinnati, and are being rapidly fastened together, making a floating bridge of great sustaining power. They are laid side by side, and a platform, giving much the appearance of a plank road, passes over the middle. In a few days the Ohio here will be crossed by a highway, which, while affording passage for any number of soldiers and the heaviest artillery can be moved at pleasure, or, as the exigencies of the day require, to points above or below.

More Foreign Cannon.—The Philadephia *Ledger* announces that the Mayor of that city has received notice that two steel rifled cannons, made in Prussia, have arrived in New York, a present from Mr. Swaim, and are the first of the kind that have ever left Prussia—the exclusive right to make them being vested in the Prussian government. Mr. Swaim, in presenting them, makes but one request, and that is: that they always remain the property of the city of Philadelphia, and that they may be used for its defence. These guns are six pounders, and embrace peculiarities not found in other cannon.

Coal Oil Machinery.—A correspondent in Montreal inquires where he can purchase apparatus and machinery for refining oil obtained from petroleum wells. If those who manufacture and sell machinery and apparatus for all kinds of manufacturing purposes were wise for themselves they would advertise in the columns of the Scientific American. We have constant inquiries for various kinds of machines without being able to refer our correspondents to their makers

Stockings and Blankets for the Soldiers.

Miss Dix, who has charge of the hospitals at Washington established to receive sick and wounded soldiers, expresses the desire that the ladies throughout the country will show their patriotism by knitting woolen stockings for the soldiers, which they will soon require in large numbers. Quartermaster-General Meigs has issued a call for a contribution of blankets.

The troops in the field need blankets. The supply in the country is exhausted. Men spring to arms faster than the mills can manufacture, and large quantities ordered from abroad have not yet arrived.

To relieve pressing necessities, contributions are invited from the surplus stores of families.

The regulation army blanket weighs five pounds; but good sound woolen blankets weighing not less than four pounds, will be gladly received at the offices of the United States Quartermasters in the principal towns of the loyal States, and applied to the use of the troops.

To such as have blankets which they can spare, but cannot afford to give, the full market value of suitable blankets, delivered as above, will be paid.

Employment for Women.—We learn from the Philadelphia *Ledger* that an effort is on foot in that city to organize an institution for educating women for industrial pursuits. It is fast getting to be generally understood that women are not employed in many pursuits in which they might be profitably engaged both for themselves and the public, because they really are not possessed of the requisite skill. They have not the skill required, because they have not been educated to work at any trade, as men are educated, by serving a regular apprenticeship, or otherwise. If these means are furnished and proper schools established where woman can acquire skill, and practically establish her claim to employments now denied her, a wider field of operations will be opened to her talents and a better remuneration given to her labor.

Photographs from the summit of Mont Blanc have been obtained by M. Bisson, who attempted to do so last year, but was prevented by bad weather. On July 22d, in the presence of the inhabitants of Chamouni, he commenced the ascent, accompanied by Auguste Belmonte, the celebrated guide and twenty-five porters who carried the apparatus. After overcoming many difficulties arising from violent winds, cold and fatigue, M. Bisson succeeded in obtaining several good photographs, and on the evening of their return Chamouni was illuminated with fireworks, and other demonstrations of respect were bestowed upon the intrepid artist.

The Commerce of Philadelphia.—Notwithstanding the present disordered condition of the United States, the commerce of Philadelphia, so far as the shipping interest is concerned, has suffered but little, as the following comparison of the arrival of foreign and coastwise vessels in 1860 and 1861, will show. During the present year, up to Sept. 1st, the arrival of foreign vessels numbered 368, and of coastwise, 29,529. During the same period in 1860, the number of foreign vessels was 411, and of coastwise, 22,953, the falling off the present year being principally in boats and barges.—Philadelphia *Ledger*.

There are 5,598 boats belonging to the Erie Canal, of which 1,346 are of greater tunnage than the vessel in which Columbus discovered America; and it may be added, that the aggregate cargoes these boats can float in a season, from the lakes to the ocean, would load the combined fleets of the world.

In Ireland there are 550,000 spindles employed in flax spinning. They are managed by 27,000 operatives, and produce as much yarn as 1,100,000 females spinning on hand-wheels. No less than 21,000,000 lbs of linen yarn are exported annually from Great Britain.

The Artesian Well at Fort McHenry.—Workmen have succeeded in striking a vein of good water at the depth of one hundred and forty-two feet from the surface in a bed of gravel. This will be a great convenience to the Fort should the supply prove adequate.

Time for Mares Carrying Colts.—W. H. Ladd states in *Field Notes*, that from records kept the last thirteen years, he finds that the most usual period of pregnancy with mares is eleven months and a half. As mares get older the time is increased as a general rule, a few days in each year.

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Carcel and his Lamp.

To Carcel, the clockmaker of Paris, we owe the solution of an important difficulty in lamp-making—the avoidance of the projection of the shade from the reservoir. In a lamp which he constructed, Carcel made the reservoir for oil as the lower part of the lamp, and placed close to it a clockwork which moved a little force pump, the piston of which raised the oil as far as the wick. The spring was reached by means of a key. The mechanical means employed by Carcel for raising the oil to the burner were as ingenious as elegant; therefore have we changed nothing of the principle of the inventor's lamp. The wheel work that he adopted has always been retained, the improvements being secondary points in the mechanism.

Carcel drew but a small profit from his important discovery. Like many originators of useful inventions to whom we are indebted for the luxury and ease of actual life, he left to others the profits and benefit of his work. He died in 1812, full of infirmities. Life had been to him but a long and painful struggle. When he wished to patent and secure to himself the property of his discovery, and to commence the use of it, he was obliged to have recourse to a partner to find the necessary funds. It was the apothecary Carreau who joined him; thus, the patent, which was delivered the 24th of October, 1800, bore the two names of Carcel and Carreau. But the latter had nothing to do with the discovery, though his intervention in the enterprise was not without its advantages. Carcel, greatly discouraged, would not have followed up the work he had proposed for himself had it not been for the entreaties and encouragement of his friend. However, the term of the patent expired without having brought any important profit to the two partners. In the Rue de l'Arbre Sec, at Paris, may still be seen the old shop of Carcel, occupied to this day by a member of his family, bearing this sign—"*Carcel, Inventeur.*" In the doorway of this simple shop may be seen the first model of the lamp which Carcel constructed. The hot air which passes from the glass chimney of the lamp serves to put in motion the mechanism by which the oil is raised to the burner. On other lamps is clockwork, constructed as by Carcel, the needles of which are put in action by the same mechanism which raises the combustible liquid.

Vine Culture in California.

Vine culture in California is about to receive important aid from the State. Under a concurrent resolution of the Legislature, the Governor has appointed three Commissioners who are to have charge of the matter. One of them is to make a tour of all the vine growing countries of Europe, for the purpose of collecting a large number of the best varieties of vines and trees and taking them into California for distribution among the citizens. As all previous experiments in this department of horticulture have failed, because of the injury received by foreign plants on the voyage, it is the intention to employ on the steamer one or more gardeners, whose duty it shall be to watch, air and water the vines and trees. Very delicate plants will be set out in pots filled with sand, on the vessel's deck. It is also the design of the Commissioners to make a special effort to induce and form emigration companies from the vine growing districts to settle in California, and also to make arrangements with capitalists in France in purchasing grapes from the producers, and making them into wine, brandy, and champagne, to establish houses in different parts of the Golden State to purchase the grape grown therein, to manufacture them into wine and to erect a bottle manufactory. The plan suggested for raising the money to carry out the enterprise is, to divide the people of California into four classes, each person of the first to pay $500, the second $400, the third $50, and the fourth $25, in consideration for which subscription to the fund every subscriber is to receive a designated share of the vines, trees, and plants to be imported, the shares to be proportioned to the sum paid by each.

Each person paying $25 shall receive twenty-five varieties of choice vines, two cuttings of each; among them shall be the seedless Sultana raisin, the currant, the celebrated Madeira and mammoth Palestine, two paper shell almonds, one of Smyrna and the other of Italy, two oranges of choice variety, two lemons, two olives, two figs, two large Italian chestnuts, two pomegranates, and a bound volume of the report, which will contain full instructions for the making and fermenting of wine as it is done in the different countries, also the manner in which Champagne and Cognac brandy is made; showing the mode of curing and packing raisins, figs, and currants, pickling olives, making olive oil, drying and curing the celebrated Mecklenburg fruit, preserving grapes and other fruits in cans.

The Cotton Question.

The rapid development of the cotton industry is the most extraordinary on record. The main region of the cotton culture is the Southern States of North America; the chief seat of the cotton manufacture is the city of Manchester in England. In a paper read by Mr. Bazley, M.P., before the late meeting of the British Association of Science, he presented a concise report on the rise and progress of the cotton manufactures. One century ago, he stated, the population of Manchester was less than 30,000; now it exceeds 350,000, and as a center of business it contributes to engage three times this number of persons. How came this to pass? Let Mr. Bazley answer. He says, "almost simultaneously Wattgave available power to the steam engine, Hargreaves, Arkwright and Crompton invented their spinning machines; the power-loom was the result of the labor of Dr. Cartwright, and the fly-shuttle came from Kay, of Bury; Heathcoat's genius contributed the wonderful mechanism by which lace was essentially taken from hand labor, and Nixon originated calico-printing in the vicinity of London. These distinguished men by their inventions gave an impulse to the multitudinous productions of manufactures, chiefly in cotton, and Lancashire has obtained the largest share of the industry thus initiated." From other sources we learn that the first American cotton introduced into England was in 1784, the amount being only eight bags. In the subsequent year twelve bags were sent from Philadelphia and one from New York. Such were the humble beginnings of the great cotton manufactures, not quite a century ago. During the past fifty years upward of twenty billion pounds weight of cotton, obtained from all sources, have been consumed in Great Britain, and no less than eighty-five per cent of this amount has been obtained from America. During the past year alone, the value of the British cotton manufactures amounted to the enormous sum of $400,000,000, of which, goods valued at $275,000,000 were exported. The estimated capital invested in buildings and machinery connected with this manufacture in Great Britain is $1,000,000,000, and five millions of the people are directly and indirectly dependent upon it for subsistence. These facts give us an exhibit of the vast interests in England which hang upon obtaining a sufficient supply of cotton. There is not a quarter of a million of bales of cotton in Liverpool at present, and none coming in from America, while the yearly supply requires 2,500,000 bales. It is no wonder that this question engages such a large share of public attention in England just now, for unless a supply be obtained from other sources to take the place of American cotton, 4,250,000 people will be deprived of their usual means of obtaining a livelihood.

Shoddy—The Way it is Made.

Since the charges, so extensively circulated against a portion of our army clothing contractors, of making the soldiers' uniform of shoddy, the word has passed into general use, and has become a synonym for everything that is false. Logwood brandy, a counterfeit note, an untrue statement, a young man who deceives a girl with false promises—are all designated by the expressive term "shoddy." Though the term is applied to everything unreal, the article has an actual existence, and several persons are engaged in its manufacture. There are now no less than six shoddy mills in full operation in this State, four or five of which are located on the Hudson river, and one in Troy. It is said that they are doing a large and handsomely paying business. Woollen rags are $5 and $10 per tun for making shoddy cloth. Fine black scraps are worth $100 to $150 per tun. The shoddy manufacturer passes them through a rag machine, which tears the rag to wool, and cleans it of dust. When reduced to soft wool, the shoddy is saturated with oil or milk, and mixed with new wool in as large proportion as possible. White shoddy is used in blankets and light-colored goods, and the dark description for coarse cloth, carpets, &c. The shoddy is the product of soft woollens; but the hard or black cloths, when treated in a similar manner, produce "mungo," which is used extensively in superfine cloths, which have a finish that may deceive a good judge. It is used largely in felted fabrics. Shoddy in the cloth of a coat will soon rub out of the cloth and accumulate between it and the lining.

Flax Cotton.

A great deal has been published lately on the above subject, especially in our daily papers, and it has been stated that flax cotton capable of being used as a substitute for common cotton, can be produced for nine cents per pound. It would naturally be expected that when ordinary cotton is now selling for eighteen cents per pound, that this would be the very time to bring flax cotton into market and obtain very remunerating prices for it. We must state however, that thus far, we have seen no larger quantities than mere samples exhibited. There has not been a pound of flax cotton fit for carding and spinning yet offered for sale in New York, to our knowledge. Last week we examined several samples of flax cotton which were publicly exhibited in one of the warehouses in our city, and two manufacturers present stated they were ready to take a large quantity of it, provided they could employ it as a substitute for cotton, but they were incredulous and wished to try one hundred pounds of it at first.

There is a very inviting field open for introducing a substitute for cotton. If the state of affairs continues as at present,—with the southern ports blockaded,—for four months, about two million bales of flax cotton may be sold, for at least fifteen cents per pound, if it can be used on cotton machinery. Never before in the history of the world, has such an opening been presented for the introduction of a new, cheap fibrous material into our manufactures. Large fortunes are yet vibrating on the cotton question, and inventors cannot devote themselves to a line of study more profitable to themselves and the country, than in finding a substitute for cotton.

Gun Cotton—New Manufacturers—Cotton Gunpowder.

The London *Chemical News* refers approvingly to a patent recently obtained in England by S. Barnwell and A. Rollason, for obtaining new and peculiar products from mixtures of gun-cotton (pyroxyline) with various substances.

In order to obtain cheap gun cotton, the patentees state it may be made of rags instead of new cotton. It is first dissolved in any of its solvents, such as ether and alcohol and becomes collodion. To this is now added any of the purest animal and vegetable oils and it forms the new liquid which is to be used as a cement and vehicle. By adding to it gums and resins a cement is formed which may be rolled out into sheets and stamped in dies into cups, fancy boxes and various other articles. The oxyd of copper imparts a green color to it, and the chloride of lime added renders it uninflammable. The addition of fine flax fiber or the *flocks* of wool render it strong and flexible. It is stated to be an excellent compound for taking casts required for the purposes of dentistry, the models of jewelers and other articles requiring sharp and smooth edges and sides.

The collodion oil liquid when very thin may also be employed as a varnish for pictures, prints, &c.

It is also stated in the specification of the patentees that gun cotton reduced to powder and mixed with niter and sulphur as a substitute for charcoal makes a superior gunpowder. It increases the strength of the powder; the combustion is very perfect, avoiding residuum, which is the greatest evil connected with the use of common gunpowder in firearms. This is a subject demanding attention from our manufacturers of gunpowder.

Two great railroad collisions have lately taken place in England. By one of these no less than sixteen persons were killed and fifty wounded. It was a Sabbath day excursion train. Gross negligence on the part of the officials was the cause of these horrors. It seems that engineers, stokers, drivers, brakesmen, signalmen and all the functionaries, from the very lowest up to the directors of these English lines, are as careless and reckless as they are on some of ours.

The receipts of the Ohio State Fair, lately held at Dayton, amounted to $10,000.

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Correspondence

MESSRS. EDITORS :—Permit me, through the SCIENTIFIC AMERICAN, to ask you and others a question relative to the ultimate destiny of all the suns, planets and satellites in this our stellar system (which is no doubt a distinct and independent creation). First, is there any known law that will ultimately dissolve the planets and smaller bodies in their sun or center? Second, are the sun's now revolving around Alcyone, their supposed center, tending inward to, or outward from the Milkyway? Third, can it be demonstrated upon scientific principles that, as the bodies, called planets, cool and become more dense, their attraction for the sun becomes greater and greater without increasing their outward tendency, called centrifugal force—so much so as to finally land them in the sun? We now find the most dense bodies are nearest the sun. Now, is it because they are more dense and the sun's attraction greater? Or did it so happen by mere chance that the least dense bodies are most remote from the sun?

If it can be demonstrated that, as the bodies grow cool, that their tendency is toward their center, so as to keep up an equal temperature for a much longer time than could be possible under any other known principle; then, when Neptune comes to have the density of our earth, he may also move in the Earth's present orbit, and so with all the planets; until Neptune moves in the orbit of the *baby* planet and completes his revolution in but three weeks, instead of one hundred and sixty-four years. But long before that time all the planets within the orbit of Neptune will rest upon the bosom of the Sun; and, finally, Neptune will rest, with all his brethren and sisters upon the bosom of their father. Can this be demonstrated? Then the same law will ultimately not only bring our sun into the central sun, but the last, and furthest star in the Milkyway will also join the many million suns upon the bosom of their father, Alcyone. Then this creation will be in a great measure spiritualized; all things combustible and subject to change from the effect of heat, will return to their constituent elements; and all oceans, seas and waters within our creation, will unite with the united atmospheres, which would be vast indeed.

Now, the question is, can such a result be demonstrated from any known law or facts discovered? It is my opinion that this will be the ultimate result, though I solicit scientific evidence. For the same law that can be demonstrated within our little creation, will have to be taken as a universal law for all those other creations far, far beyond the Milkyway, two thousand five hundred of which have already been discovered—whose light of to-day may sweep through that dark intervening space for many thousands or perhaps millions of years, with a velocity of 12,000,000 of miles per minute before it reaches this creation of ours within the Milkyway. These are thoughts for reflection, and he that hath an ear to hear, let him answer. G. NEWCOMER.

Meadville, Pa., Sept. 18, 1861.

[The condensation of the mass of a planet would cause it to revolve more rapidly on its awn axis, but would have no tendency to carry it nearer to the sun.

If there is a resisting medium in which the planets revolve, then they will be drawn gradually inward till they end their circling course in the sun. The latest discoveries render it probable that there is such a medium, but the question is not settled. If this medium extends throughout the interstellar spaces, and if the stars of our stellar system are revolving around a common center, then they also will finally be all drawn together into a common mass. It is difficult to conceive of any observations by which the centripetal motion of the stars can ever be determined; but since it has been positively ascertained that iron, sodium, &c., enter into the composition of the sun, it would be irrational to affirm that any knowledge is necessarily beyond the reach of the human intellect.—ED.

THE flax trade of Dundee, Scotand, has become very animated. This town is the center of the jute-hemp manufactures

How to Determine the Location of the Channel and the Bar, without Sounding, at the Mouth of any River on any Coast.

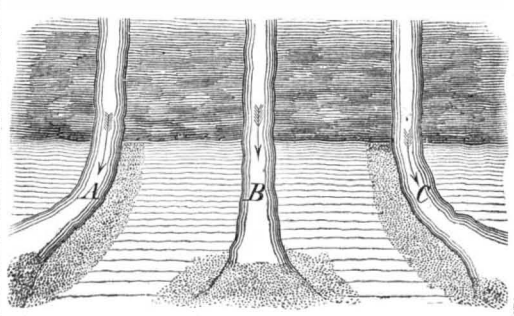
MESSRS. EDITORS :—The bar is a deposit of sand, mainly from the waters of the lake or sea into which rivers fall. This deposit will fall where the two currents meet. There is usually a prevailing current in all bodies of water. This current, in inland water, is usually caused by the prevailing wind where an outlet does not produce a stronger current.

In many cases, the location of the bar changes from the right to the left bank of the mouth of rivers, and *vice versa*, on the same coast. Thus, where the waters of most of the rivers on the west shore of Lake Michigan meet the lake waters, the river waters turn to the left bank and run down the lake, and the bar is found at the right bank up the lake side, because the lake current at most points is down the lake. On the contrary, the waters of Chicago river, on meeting the lake waters, turn to the right bank, and run *up the lake*, and the bar forms at the left bank down the lake side, because the prevailing winds at that point produce a current up the lake.

The sand shower, as the snow shower, diffuses evenly its deposit over a large area in a calm, and only creates a sand bank (as a snow bank) by violence. The snowflake borne by the wind, on meeting violent opposition, falls perpendicularly, and forms the snow bank. Particles of sand borne by the wave, on meeting violent opposition, fall perpendicularly, and form the sand bank or bar. The light *debris* of rivers is deposited only in a calm.

Rules for the location of the bar and the channel at the mouth of any river, on any coast :—

1. From any source learn the direction of the prevailing sea current. This may be ascertained by observing the direction of the river waters after they enter the sea. The river waters do not usually mingle with the sea waters for several miles. It is the sea current that turns the river current to the right or left bank.



2. If the river waters turn to the right bank (see river A), then the sea current is from the left bank, and the bar is located at the left bank, is near the shore, and well defined.

3. If the river waters turn to the left bank (see river C), then the sea current is from the right bank, and the bar will form at the right bank against the prevailing sea current.

4. If the river waters pass into the sea in a direct line (see river B) at that point, the prevailing winds are on shore or off shore, the sea current is light, and the bar will be located out from shore—a flat bar, a shoal—and lies across the channel.

5. When the bar is located at the right or left bank, the point of the bar extends out, and frequently crosses the channel.

Upon ice-bound shores (the current being light under the ice) at the time of freshets, the river current frequently cuts through the bar and changes the channel for the time being; but when the causes which produced the violence have ceased, geology resumes its work, fills up the chasm in the bar, and the channel returns to its geological location.

This theory is founded upon facts discovered in the early navigation of great lakes, previous to the improvement of harbors or the establishment of lights and buoys. The early navigators, by observing facts, fell into this theory, and, without knowing it, followed the log book of Nature. Nature has planted buoys on every coast; it is the business of science to discover them. JOSEPH BROWN.

Ann Arbor, Mich., Sept. 25, 1861.

THE Merrimac Manufacturing Company, in Lowell, Mass., has 5,000 bales of cotton on hand. This will last about six months.

Science in Schools.

MESSRS. EDITORS :—The intelligent practical views taken by the SCIENTIFIC AMERICAN on all matters of science, induce me to second some ideas of a former number on the above subject.

The important relations of the natural sciences to the industrial arts, and human welfare generally, claim for them, as it seems to me, a more careful consideration than they now share from directors of public instruction. In our State schools for the training of teachers, no department receives less attention than this. The art of teaching grammar, arithmetic, geography, history, &c., is thoroughly taught in most of these teachers' schools, as it should be. Ingenuity is taxed to devise illustrations for making clear, and engaging to the child, the principles of grammar or the facts of history, for instance; but in regard to teaching the elements of natural science there seems to be a strange neglect.

I shall not here attempt to prove what I believe to be self evident, viz., that the study of natural objects and general phenomena of science, precede, in the natural order, the study of such branches as grammar and abstract numbers, involving an exercise of the reflective rather than the perceptive faculties; my object being merely to show why results so unsatisfactory are seen in the study of such sciences as chemistry and natural philosophy in so many schools where the teaching of these is attempted.

Everybody who is acquainted with the operations of the young mind knows that its ideas are gained chiefly through the senses of seeing, hearing, &c. Hence the importance of visible illustrations by experiment, in order to make clear and impressive the facts and principles of these sciences. It is idle to attempt, for example, to give a class of lads a clear understanding of air and its mechanical and chemical relations to respiration, without some visible experimental illustration. No mere book or oral description of electro-magnet, or the telegraph, ever enables the school boy to comprehend their action.

So again, the chemistry of combustion and oxydation, bleaching, &c. How is it possible to make such subjects clear and engaging without some visible illustration of the chemical action of oxygen, hydrogen and chlorine gases?

To teach properly, then, the elements of such sciences, *they must be properly illustrated.* And in this consists the chief difficulty—the art of mechanical illustration. Chemistry and natural philosophy are experimental sciences and require for demonstration machines and manual skill. Now this manual skill with apparatus cannot be learned from studying books or witnessing ordinary experimental exhibitions. It requires more specific directions—a more practical study. What teacher ever learned from books or lectures merely how to perform with promptness, accuracy and safety to apparatus, the more delicate experiments with an air pump; or how to separate, collect and experiment with even the simple gases in chemistry? Success in scientific illustrations depends upon attention to details. For example, a particle of dust between the surfaces of a glass receiver and the plate of the air pump, the lack of a washer or a drop of oil may cause failure in a series of proposed pneumatic illustrations. Want of discretion in applying heat may fracture a glass receiver holding a chemical mixture, and do serious damage to a choice apparatus. And so throughout the whole range of scientific manipulation, ignorance and want of attention to details is the chief cause of bungling and failure.

From several years of experience in an apparatus manufactory and as a teacher of practical science, I have had some opportunities for observing the manner of using apparatus in schools, and I am forced to believe that in most of these this is available for illustrating science to *less than one-third* the extent for which it was intended by the manufacturer and purchasers.

The teacher who attempts to illustrate by experiment the principles and facts of science, without having given same special attention to manipulations with instruments, is almost sure to bungle before his classes, injure the machines and create for himself and his pupils a disgust of experimental science.

The awkward and expensive attempts too often made to illustrate even the simplest principles, do a vast deal to discourage the proper study of elementary philosophy and chemistry in schools. When will

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Boards of Education learn that colleges, lectures and text-books of science do not necessarily qualify for teaching where manual skill is requisite—that it is the art of preparation as well as delivery that the teacher of philosophical science should comprehend.

When more special attention shall be paid, at teachers' seminaries, to the art of manipulating with economy and grace, then may we expect to see elementary science assume its deserved importance in our schools, and our youth, quickened in perception, go forth keen to explore the fruitful fields of science.

A. W. Sprague.

Boston, September 25, 1861.

Penetration, Length of Barrels and Twist of Rifles.

Messrs. Editors:—In looking over the remarks of Mr. Walton on long rifles, on page 182 present volume of the Scientific American, I find some argument in favor of regular-twist long rifles. The advantage gained by hunters with long rifles is not due to the length of barrel so much as the distance between the sights. I am satisfied by experience that the range of a shot is only due to the amount of powder consumed before the bullet leaves the barrel. I have a pistol with a bore to receive 100 balls to the pound; the depth of the bore 7 inches, diameter, of the barrel across the muzzle $\frac{7}{8}$ of an inch, at the back end 1 inch. We have also one of Lewis's rifles of same bore, 3 feet 1 inch in length of barrel and weighing about 10 pounds. The balls fit better in the rifle, and can be used with thinner patch than in the pistol. Now the amount of powder which will in the pistol make a ball penetrate white pine $\frac{3}{4}$ of an inch will not give it force enough to stick when fired from the rifle. It loses its force in overcoming the friction in the long barrel. I can make, with the pistol balls, a penetration into seasoned hemlock $3\frac{1}{2}$ inches. It is evident that the powder used in rifles is all burned before the ball has moved one foot in the barrel, therefore the length of barrel beyond this is for the sights, as a pistol ball will go just as accurately ten or even twenty rods as one from a rifle, and no length of barrel can affect it after it has left the muzzle. Every inch of distance between the sights is an advantage, and I think if our target shooters could have an accurate sliding front sight they would find it an improvement.

In regard to the amount of twist in rifles, either regular or gaining twist, this is a question of considerable difficulty to discuss, because it is the imperfection of the ball that makes any twist required. The more perfect the ball the less twist is necessary. I am in favor of an increasing twist. I have used both regular and increasing twist rifles as much as any one in this section. I have made machines for rifling both kinds, and have machinery now for making any increase of twist desired. I have done the best shooting with the gaining twist. The amount of twist in rifles cannot be decided by an experiment with only two guns. I had two rifles made as near alike as possible, with two feet 11-inch barrels, and the backsights moved with a screw of about 29 threads to the inch. When we tested the two at 90 rods range, we had to give one of them three turns more to raise the sight than the other, and at shorter ranges in proportion. We used the same chargers and ball, and all things as far as the eye could detect, were alike and shooting as good. This was of such quality as to make an old man (a hunter of earlier days), who stood by open his eyes wide with wonder. J. H. Wait.

Sandy Hill, N. Y.

Spiral Projectiles an Old Invention.

Messrs. Editors:—As rifled cannon and cannon shot appear to be all the talk now, it reminds me of seeing an old account of experiments tried about the year 1789, as related in the *Emporium of Arts and Sciences*, published in August, 1814, by Thos. Cooper. This was a shot with spiral grooves cast on the hemispherical forward end, which, on trial, proved as was expected, that the shot, in passing through the air, attained a spiral motion. Shot of this kind were made at North Wales, but it appears that the accuracy attained was little if any greater than with the spherical shot, as some struck with the broad side (being simply cylinders with rounded ends) and others turned so as to strike the butt with the end that came out of the gun last. It occurs to me that I have not seen an account of any experiments on rifled cannon or cannon shot of an earlier date than this. If I am in the dark, I think the Scientific American or some of its numerous intelligent readers can enlighten me.

J. J. B. Hatfield.

Martinsville, Ind., Aug. 21, 1861.

Messrs. Editors:—A few days ago Mr. L. A. Shedd and myself were engaged digging muck. The old turnpike leading from Windsor to Woodstock crossed the swamp in which we were at work, and we were digging a ditch across the road; when four feet from the surface, under two feet of gravel and two feet of muck, with a layer of logs between, we found a *live toad!* It was a small one, about an inch and a quarter in length, the same color as the muck in which he was found, which was a dark reddish-brown. He was very soft to the touch, and moved very slowly at first. We placed him on the bank, and in the course of an hour he had crawled two or three feet—to the top of the pile of muck—which was the last we saw of him. The logs spoken of were black ash and birch. The birch was considerably decayed, but the ash was destitute of bark, and as sound as ever. The turnpike was built, as nearly as I can ascertain, about ninety years ago. The question arises, How old is the toad? Byron P. Ruggles.

Hartland, Vt., Sept. 23, 1861.

[The above case of our correspondent is by no means strange orsingular, as compared with others of a similar nature related of toads. We remember a case having been brought under our notice more than twenty years ago, of a live toad which was exhumed from a freestone quarry, fifteen feet under the surface. There was a small cavity in the rock similar in form to the toad, and no entrance to it was perceptible. It appeared as if the rock had been deposited over the creature, and that it had remained in that situation for thousands of years—Eds.

Messrs. Editors:—In consequence of the scarcity of tea at the South, the Southerners are said to be reviving the use of the Yopon or Yaupon (*Ilex Cassine*), of which the North Carolina Indians made their "black drink," and which has been more or less used ever since in that region, though mainly by the poorer classes. The plant grows on the coast from Virginia southward, especially on the low islands which enclose Pamlico Sound, &c. The leaves and twigs are gathered by the inhabitants and bartered for corn, bushel for bushel.

The *Ilex Paraguensis* of South America, which furnishes the famous maté, or Paraguay tea, so extensively used as a beverage throughout that continent, is of the same genus, and it would be interesting to compare their properties. The maté is aperient and diuretic, and has, like opium, both an exhilarating and a narcotic power. When used long and excessively (as it often is) its injurious effects upon the system are similar to those produced by alcoholic drinks. It is a suggestive fact that it contains the same principle which is found in both tea and coffee, and is called *theine* or *caffeine*.

Cannot some of your readers who may be acquainted with the Yopon, give some account of its nature and effects? M. S. B.

Monterey, Sept. 20, 1861.

Messrs. Editors:—Will you please inform me how to remove superfluous hair without injury? Can you also inform me whether the man who makes onguent for the growth of whiskers is reliable or not? H. N. F.

Coventry, R. I.

[We are puzzled to know, from our correspondent's two inquiries, whether he really wishes to find something to remove his whiskers or to improve their growth. From the first inquiry, we should judge he was anxious to dispense with his beard, but from the second we come to just the opposite conclusion.—Possibly the writer is going the beautifying business and wishes an article which may suit both classes of customers—the whisker-promoters and anti-beard advocates.—Ed.

New Marine Glue.

A patent has lately been taken out in England, by Mr. W. J. Hay, of Portsmouth Dockyard, for a new marine glue, which is said to possess superior qualities for *paying* the seams of vessels and all such purposes. It is composed of asphalt, 60 pounds; vegetable tar, 15 pounds; naphtha, 2 pounds; and spirits of turpentine, 4 pounds. These are all combined by mixing them in an iron vessel exposed to heat over a fire, and thoroughly stirred until a homogeneous compound is obtained. In this condition it is too thick to be put on with a brush like paint, but it may be thinned down to any condition required with a mixture of naphtha and turpentine. It is recommended that half an ounce of india rubber be dissolved in each pound of naphtha used for thinning. It must be put on while hot.

Salt from the Sea.

A correspondent of the Philadelphia *Ledger* recommends that works be erected for manufacturing salt from sea water. He suggests that salt works be located as far from rivers as possible, in order to obtain the strongest brine, and that anthracite coal be used for evaporation. He says:—

The use of anthracite coal as a fuel for the evaporating furnaces would be more reliable than evaporating by the sun, and the coal could be taken by the vessels which go for the salt. There is a constant and increasing demand for salt, upon which we are now mainly dependent on foreign countries, and in the event of a war with Great Britain the supply would be cut off. This should induce our people to manufacture for themselves, and be independent of a foreign supply.

Salt is very extensively used in Scotland and in England in the manufacture of the impure carbonate of soda, the quantity of which used in the arts is enormous. Mr. Musprat, an extensive manufacturing chemist, states that in one year alone 50,000 tuns of soda ash and 20,000 tuns of chrystallized carbonate of soda were manufactured in Great Britain, and the demand was constantly increasing. Salt enters very largely into the composition of these articles and when we have extensive salt-works in our own country, we can make these articles also, immense quantities of which are now imported.

There are several erroneous opinions abroad respecting the manufacture of salt. It cannot be made profitably from sea water where fuel has to be employed for concentrating the brine. The old "Salt Pan" works in Scotland, at which salt was formerly made from sea water, have become manufactories of table salt from the rock salt of Cheshire, in England. It costs too much money for fuel to evaporate sea water in order to obtain salt from it. In warm climates, such as Florida and the West Indies, salt may be profitably manufactured by solar evaporation from sea water. Many incorrect statements respecting a want of salt in the Southern states have lately been disseminated. It is supposed that the South is *entirely* dependent upon the North or foreign importation for its supply of this necessary substance, but this is not the case. Next to New York, Virginia makes the greatest quantity of salt annually of any State in the Union. The amount manufactured by New York is 5,593,447 bushels per annum; by Virginia, 3,650,000 bushels; by Florida, 70,000 bushels. Salt is manufactured in eleven States, the total product being 13,388,447 bushels; but this is not quite half the amount that is required for use, as, in 1860, we imported 14,094,227 bushels, of which 10,335,256 came from England. The finest table and dairy salt comes from Liverpool.

All the soda ash which we use for making saleratus is manufactured from salt, so is all the chlorine used for bleaching linen and paper pulp; and so is all the muriatic acid which is so extensively employed in the various arts. We are not only dependent on salt for table use, but for the snowy whiteness of our linen. The correspondent of the *Ledger* does not over-estimate the importance of salt.

Short Time in English Mills.

Late reports from the English manufacturing districts state that many of the mills are now running on short time owing to a deficit in cotton.

At Bury, nearly all the concerns of importance have resorted to four days per week in spinning and weaving; as have several mills at Wigan and Preston also. This measure will now be general at Blackburn and its busy neighboring places. At Ashton the example of Stalybridge is followed, except, we believe, in two establishments. The Burnley spinners, or several of them, are likely to follow the manufacturers in the same course. There is hardly an exception at Bacup; at Clitheroe not one. And, scattered over the entire district, there is a very considerable amount of short time among the consumers of American and Surat cottons, and of the yarns made from those cottons; and now that amount will be much increased.

This state of facts strikes a heavy blow at the cotton producing interests of this country. Every day that the mills work short is just so much damage to "King Cotton." If this fearful rebellion continues much longer it will destroy in a great measure the cotton interests of the south.

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Disaster to the "Great Eastern."

This leviathan of the deep—the greatest ship ever built by man—has not been able to brave the wrath of old King Neptune. *The Great Eastern* should have been in New York three weeks ago, but instead of having been able to reach her destination, she had to put back to Ireland in a disabled condition. The captain of the Cunard steamer *Persia*, reports that he met the *Great Eastern* on the 16th of September, about 200 miles from Queenstown, to which port she was putting back with bulwarks stove in, and both paddle wheels gone. She was being propelled by her screw, and being deprived of her side wheels for balance boxes she "was rolling dreadfully." We cannot recollect of any other steamer having had her paddle wheels broken off and carried away. The wheels of this great steamship were not secured in the usual manner to the hull. They had only one bearing each on the inside, and were devoid of outside support at the very points where it was most required, viz., the extremities of the shafts.

When nearly ready to go to press the screw steamer *Bohemian* arrived with the mails of the *Great Eastern*, and from our foreign exchanges we obtain the following account of the cause of her disaster, the scenes on board, and the injuries which she sustained. The *Great Eastern* is what the sailors call "an unlucky ship," but it will be noticed that her engines received no injury during all her troubles :—

The *Great Eastern* left her moorings in the river Mersey at 1½ o'clock on Tuesday, the 10th of September. The pilot left her at 4 o'clock. She immediately put on full speed and all went well with her until 4 o'clock on Thursday, when, a strong breeze prevailing, the aft tackle of one of the forward boats on the port side became unhooked, leaving it suspended by one tackle. The Captain endeavored to steady the ship while this was being rectified but found to his surprise that she would not answer the helm. The fact was, though it was not known at the time, the rudder-pin was broken. The fore staysail was then run up, but the wind immediately split it into ribbons. The fore trysail was then run up, but it was blown away. The paddle engines were now stopped, and the boat lashings ordered to be cut away, when the *Great Eastern* once more started on her course. The passengers then went down to dinner, and from that moment commenced a chaos of breakages, which lasted without intermission for three days. Everything breakable was destroyed. Furniture, fittings, services of plate, glasses, piano—all were involved in one common fate. It now became known that the rudder was unmanagable. About six o'clock the vessel had to be stopped again owing to two rolls of sheet lead, weighing several hundred weight each, which were in the engine room, rolling about with every oscillation of the vessel with fearful force. These having been secured, another start was made, when a tremendous grinding was heard under the paddle boxes. The shaft had become twisted, and the floats were grinding against the side of the ship. The paddles were stopped, and thenceforward the scene is described as fearful in the extreme. The ship rolled so violently that the boats were washed away. The cabin, besides undergoing the dangers arising from the crashes and collisions which were constantly going on, had shipped, probably through the portholes, a great deal of water, and the stores were floating about in confusion and ruin. Some of the chandeliers fell down with a crash. A large mirror was smashed into a thousand fragments, rails of bannisters, bars and numerous other fittings, were broken into numberless pieces.

Some idea of the roughness of the night's incidents may be gathered from the fact that the chain-cables polished themselves bright with friction on deck. A spare riding bit gave way on the cable deck, and knocked a hole through the ship's side. Two oil tanks, also on the cable deck, were so much damaged by another concussion that 200 gallons of fish oil contained in them ran into the hold, and caused, during the rest of the unhappy voyage, a most intolerable odor. The luggage of the passengers in the lower after cargo space was lying in two feet of water, and before the deliverance of the ship was effected, the luggage was literally reduced to rags and pieces of timber.

Twenty-five fractures of limbs occurred from the concussions caused by the tremendous lurching of the vessel. Cuts and bruises were innumerable. One of the cooks was cast violently, by one of the lurches, against the paddle-box, by which he sustained fearful bruises on the arms, putting it out of his power to protect himself. Another lurch drove him against one of the stanchions, by which concussion one of the poor fellow's legs was broken in three places. The baker received injuries of a very terrible character in vital parts; and one of the most striking incidents of the disaster was this poor, brave man, crawling, in his agony, to extinguish some portion of the baking gear which at that moment had caught fire. On Thursday night the gale was from the south-west, but on Friday morning it had turned round to the north-west, and the ship was drifting an unmanagable log in the trough of the sea. She did not ship much water on deck.

It was soon discovered what was the matter with the rudder. The pin upon which it turned had broken off three feet above the point where it entered the stern of the ship. It was wrought iron, ten inches in diameter—and the iron appeared thoroughly good, breaking at that particular point where it appeared the strongest, which was one of the most curious incidents of the disaster. It was now found necessary to rig up some kind of steering gear. A spar was thrown overboard with the anchor-fluke attached, which dragging in the water behind the ship, might bring her head to the wind; but the swinging of the rudder made it useless; and a plan was then suggested to the captain by the passengers, to which the escape of the vessel is probably attributable. It was to pass two or three turns of chain cable around the rudder-pin, immediathly below the point at which the breakage occured, and secure it with wedges and small chains. By pulling either end of this chain-cable, circular motion of the pin was produced, and a connection being effected with the usual chain attached to the rudder, and a temporary wheel rigged up below the deck, a shift was made once more to proceed, but the screw of the vessel upon which the locomotion now depended—hardly a vestige of the paddles remaining—soon stopped, being fouled by the rudder, by which the rudder was prevented from veering more than was necessary to steer the ship.

All of Friday was occupied with these arrangements. The ship had drifted up the west coast of Ireland, out of the ordinary track. On Saturday night the brig *Magnet*, of Halifax, hove in sight, hauled alongside, and lay to for the purpose of rendering assistance.

Sunday, at 2 o'clock, the *Great Eastern* got under way, the rudder was found to act, and the vessel proceeded at the rate of nine knots an hour with the screw alone.

She met the *Persia* the next morning, and signaled her to come under the lee, which the *Persia* did. But the circumstances were such that the *Great Eastern's* engines could not be slackened, and the *Persia* made off, probably under the impression that foul play was intended by the *Great Eastern*. An attempt was made at an explanation, but the Persia was too far off. The *Great Eastern* continued her course on Tuesday morning, and reached the Head of Kinsale, where she stopped four hours to arrange her tackle. She signaled the shore, but no notice was taken of her. At 4 o'clock she arrived off Cork, and a small steamer came off to assist her, and the harbor was soon reached. As soon as the rudder was sufficiently repaired, the ship would proceed to Liverpool.

Our informant states that it is almost impossible to exaggerate the anxious state of mind which prevailed while the fate of the ship was doubtful. There were several clergymen on board, and religious services were frequent. The demeanor of the passengers was sufficient, apart from any signal of disaster around, to signify the distressing nature of the crisis. A meeting was held in the saloon on Tuesday, and resolutions of a pious and congratulatory character were passed.

The passengers expressed gratitude to the commander of the brig *Magnet*, and complimented Capt. Walker and the officers and crew of the *Great Eastern* for their indefatigable exertions.

Some of the proceedings, however, were of a less pleasant character, severe comment being passed on the condition of the ship, her strength of paddles, and the way she was ballasted.

RECENT AMERICAN INVENTIONS.

Portable Cooking and Baking Device—The object of this invention, patented by Duncan McKenzie, of Brooklyn, N. Y., is to combine a range and baking apparatus in such a way as to obtain a very portable and convenient device, well calculated for camp purposes. The invention consists in having a cooking range of usual construction placed in the bottom of a metallic case, which is provided at its upper part with a hot-air chamber, the latter communicating with the range by vertical flues; and the apartment over the range provided with a rotary holder, to receive and contain articles under the process of baking.

Water Meter.—This invention, patented by H. Q. Hawley, of Albany, N. Y., is a novel system of valve-operating mechanism, applied to operate in combination with a reciprocatory piston or diaphragm, upon whose opposite sides the water or other fluid is caused to act alternately by the operation of the valves effected by the said mechanism.

Improvement in Gun Locks—This invention consists in a hair trigger of improved construction, which affords facility for its adjustment to operate with a more or less delicate touch, and which renders it less liable than an ordinary hair trigger to let the hammer escape by an accidental blow or fall. Patented by J. Homer Smith, Brewster's Station, N. Y.

Bell Piano.—This instrument is composed of a series of bells, properly tuned, and arranged within an upright case, substantially like that of an upright pianoforte, and combined with a system of playing keys, hammers, and dampers, in such a manner as to enable the bells to be played upon in substantially the same manner as the strings of a pianoforte. The instrument may be combined with a pianoforte, to be played by the same or by a separate set of keys. Patented by C. Williams and E. F. Falconnet, of Nashville, Tenn.

Valve Gear.—This invention consists in the employment, in combination with an oscillating yoke of similar character to that described in patents Nos. 14, 145, and 16,809, granted to James P. Ross, of a spring or spring attached to the yoke for the purpose of performing the duty performed by the counterpoise levers described in the first-mentioned patent, and as the elastic lever described in the last-mentioned one. This spring performs its duty in a more effective and certain manner than the said counterpoise levers and weights, and the elastic lever, beside simplifying the construction of the valve gear. Patented by Julia A. Ross, executrix of the late James P. Ross, of Lewisburg, Pa.

Boot Patterns.—This invention, patented by Asa Forrist and Charles A. Wheeler, of Mount Vernon, Iowa, relates to an improvement in boot patterns, which are so constructed as to be capable of being extended, or extended and contracted, and thereby rendered available for cutting out boot leather of any and every required size. The object of the invention is to obtain a set of patterns which may be more readily adjusted, and in a more exact manner than those previously constructed and arranged, and also easily adapted for cutting out stock for both coarse and fine boots.

The Manufactures of Philadelphia.

We take from the *Public Ledger* the following account of manufacturing operations in Philadelphia. We call particular attention to what is said in relation to lead pipes :—

The extensive manufactory of Morris, Tasker & Co., is at present giving employment to between two and three hundred hands. This number will shortly be augmented, as orders from various portions of the country are coming in very briskly. The firm is now making up some work for parties who have contracts with the government. Within the past few years the firm have turned their attention to the manufacture of galvanized iron pipes, which are claimed to be much cheaper than the leaden pipes, and a great deal stronger. By many it is thought that if these pipes were substituted for the ones in use at the present time, a beneficial result would be experienced.

Within a few weeks past several cases in this city have come under the notice of physicians where persons have been poisoned from using the water which has been allowed to remain over night in the pipes attached to hydrants. If galvanized iron pipes were used, it would not only effect a great saving in a pecuniary way, but the health of the people would not suffer from the injurious matter which collects in leaden pipes.

The excitement occasioned some time since by the discovery of the mineral oil in the western portion of this State has caused a great demand for artesian well pipes and tubes. These are made either with the flush or locket joint, of any diameter, length or weight that may be required. The flush joint artesian well tubes are made under the patent of J. N. Bolles, and are described as "the mode of rendering cylinder tubes flush upon a line on their extension surfaces for artesian or other purposes, &c., patented June 19, 1855." This patent is owned by Messrs. Morris, Tasker & Co., who grant no licenses to other parties, or for the use of any manufacture but their own. They also prepare the tools for boring and drilling the wells.

A variety of light machinists' tools, together with a variety of malleable iron-work, is constantly being made up by the firm.

Merrick & Son have over six hundred and fifty men employed at their machine shop and foundry. This is about one hundred and fifty more than are generally engaged by them. Notwithstanding that they are building the machinery for the U. S. sloop *Tuscarora* and the gunboat *Wissahickon*, they are also constructing two gas holders for the use of this city, and along with this they are fulfilling an order for the machinery of a large sugar works in Cuba.

Savery & Co. are casting at their foundry a lot of shot and shell for the use of the navy. They are also making up a lot of pots for the use of the government. The force employed numbers about fifty hands.

J. P. Stidham & Co. have twenty-five hands employed in making up camp kettles and mess pans. About two thousand five hundred of the former, and from three to four thousand of the latter are turned out every week.

McCullough & Co., manufacturers of sheet and galvanized iron, have about one hundred and twenty-five hands employed in the various departments of the establishment. The iron manufactured at present is principally made up into kettles.

The Quaker City Iron and Nail Works have fifty men at work in making up nails and railroad spikes and chains. Some bar iron is also being made up by them.

The Penn Treaty Iron Works are running night and day with the full complement of hands, in making sheet iron. A great deal of the iron manufactured at this place is sent on to parties in Boston, who have it made up into army pans by the convicts of the State prison.

Joseph Oat & Sons, coppersmiths, are making up the copper work for the sloop-of-war *Tuscarora* and the two gunboats being built at the Kensington yards. They expect to commence in a short time to construct some large kettles and tanks for a number of sugar refineries.

The rolling mill of W. W. Lybrand has twenty-five hands engaged in making up small guide iron.

Matthews & Moore, in addition to the casting of cannon, are making boilers and iron sugar pans for Cuba.

Erratum.

In the list of Patent Claims in our paper of Sept. 21, we gave the residence of Snell and Deihm as Pottsville, N. Y., it should have been Pottsville, Pa.

SOLDER FOR BRASS INSTRUMENTS.—An alloy of 78.26 parts of brass, 17.41 of zinc and 4.33 of silver, with the addition of a little chloride of potassium to the borax, is recommended by Mr. Appelbaum, as the best solder for brass tubes, which have to undergo much hammering or drawing after joining.

THERE are 5,030 miles of railway in operation in France.

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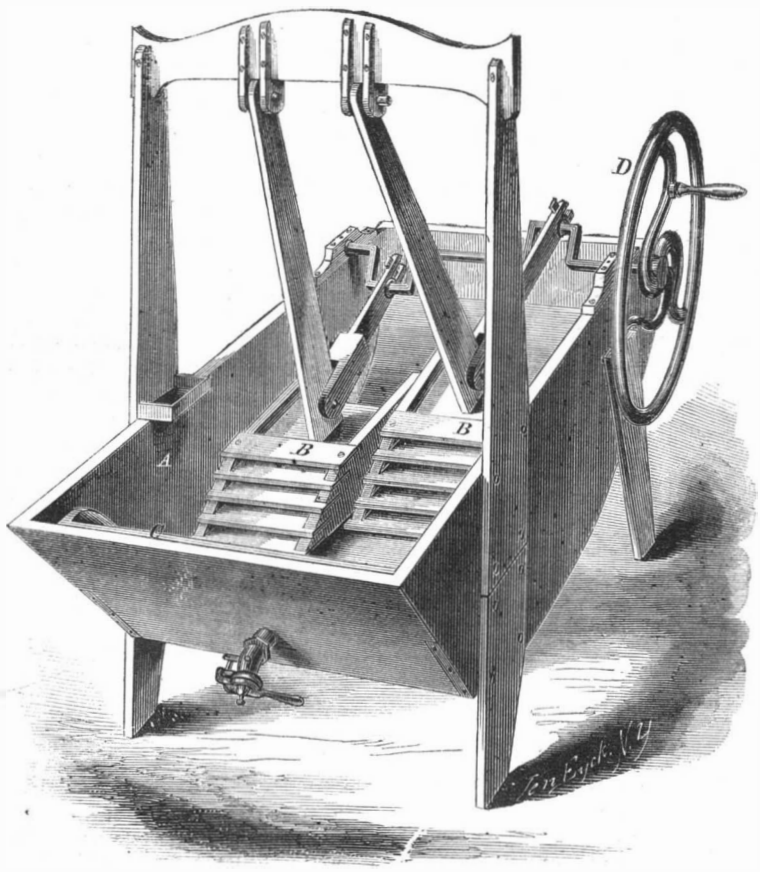
The Nonpareil Washing Machine.

The invention here illustrated, which the inventor terms the Nonpareil Washing Machine, acts upon the well-known principle of a fulling mill, and is, we believe, one of the best clothes washers which have been introduced to the public. In construction it is simple, and in operation it is so easy that a child twelve years old can work it.

The following description will illustrate the working of the machine :—The clothes (wristbands of shirts and such parts as are most soiled being soaped) are placed in the box, A, between the plungers, B B, and the washboard, C, with soap and water in proportion to the quantity of clothing, and the wheel, D, is then rapidly turned for from two to three minutes, when the work will be found completed, so far as the first water is concerned. Other clothes are substituted for those already operated on ; and this is repeated until the suds becomes too impure for further use. If it is desired to dispense with boiling clothes, the second washing may be performed with scalding-hot suds. Rinsing out with cold water completes the process.—The action of the plungers keeps the clothes continually turning over, thus causing a fresh surface to be operated on at each movement. This machine has been in use several months and has produced, we are told, perfect satisfaction to the users.

The patent for this invention was granted to the inventor, J. M. Oakley, through the Scientific American Patent Agency, Sept. 17, 1861, and further information in relation to it may be obtained by addressing Oakley & Keating, 78 South street, New York.



OAKLEY'S WASHING MACHINE.

A Novel Magnetic Tack Hammer.

The triumphs of invention have been written and sung so often that the subject has almost become thread-bare, nevertheless the theme is prolific, and new schemes are developing every day ; therefore let us write a little more, and sing another song to the worthy sons of genius, who are doing so much for the progress of the world in material things. The last thing out is a Patent Magnetic Tack Hammer. No more pounded fingers ; no more curses on the hammer. Tack driving is at length reduced to a science, and hereafter the world will go on smoothly and free from friction so far as this important branch of domestic industry is concerned. An ingenious German has invented and patented a tack hammer that lifts its own tacks, heads up, and there they hang until driven home to their appointed duty. What a convenient thing this will be, and how many trying nibbles of the fingers and how many poundings will thus be saved to man and womankind by the introduction of this humane and convenient tool. Everybody now will want a "Patent Magnetic Tack Hammer" and a good supply of tacks, for, apart from the real utility of these articles during the dull winter days and evenings, there can be no sport equal to that of driving tacks.

These hammers are permanently charged with magnetism by the magneto-electric machine patented by G. W. Beardslee, College Point, Long Island, and are made of a metal peculiarly treated by a process patented by him. The general Agency for the sale is No. 44 Cliff street, G. W. Schamm.

Cotton in California.

The low lands along the Sacramento and San Joaquin Rivers, when properly reclaimed, are said to be as capable of producing handsome cotton as the plantations of Louisiana or Texas. For a number of years past, the *Atlas* says, it has seen handsome bolls from ranches just below Sacramento. On Middle River Ranch, some thirty miles below Stockton, Mr. George Douglas, manager for Samuel Brannan, owner of the property, planted in May last some seeds of cotton, which promise to yield a rich return. The seed was put in the ground in the month of May, and, from a single stalk, the branches in August spread out some five feet in diameter. The bolls are large and healthy, and the crop will be fit for picking in November next. At the present high price of labor, it is questionable whether the culture of cotton on an extensive scale in these swamps would prove remunerative.

HOWE'S ARMY SCALE.

There is no portion of the care of an army more important than the furnishing of the supplies, and the inspection of the supplies furnished is a very important and responsible duty. As it is necessary to examine the quantity as well as the quality of the articles furnished, a great deal of weighing and measuring is required to be done, and it is very desirable to procure the best and most convenient implements for performing this great labor. For weighing, there is no other instrument so convenient as the platform scale, but these scales, from their form, are very inconvenient to pack for transportation, and in the rough usage incident to army operations they are very liable to be broken and get out of repair.

Fig. 1

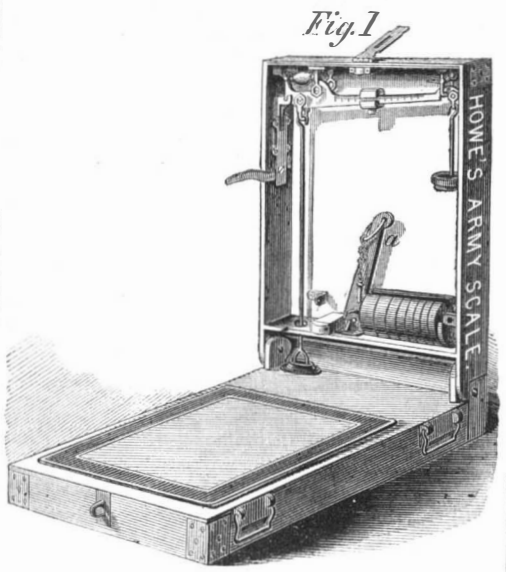
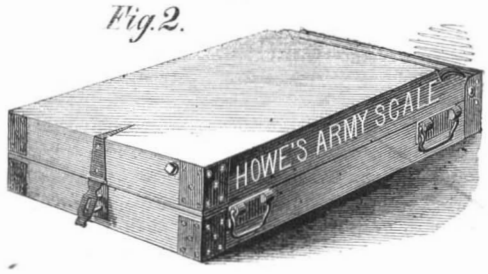


Fig. 2.



Messrs. Howe, of Brandon, Vt., have invented some modifications in the well known Howe scale, which adapts it especially to army use, rendering it exceedingly compact, holding its movable parts in a very firm manner, and boxing the whole very securely to prevent injury incamp or in transporting.

Fig. 1 of the annexed cuts represents the scale opened, and Fig. 2 shows it closed. The beam is supported in the inner side of the cover, and a joint in the sustaining rod allows the cover to be opened and closed. The weights rest in a box or rack in the cover, and when the scale is to be closed for transportation the bar, *a*, is brought down into the slots in the edges of the weights, and secured by a pin through its end. The beam is also raised from its fulcrum so as to preserve the knife-edge from injury. This is effected by means of the lever, *b*, shown at the right hand. As this lever is brought down from the position represented in dotted lines, it carries upward a vertical slide to which it is attached, lifting the end of the beam, and pressing into the groove in the lower end of the block, shown in the upper part of the scale cover. This groove is lined with india rubber, and the arrangement prevents any jar or rattle to the beam. The small end of the beam is held in place by means of a forked swinging lever, which is turned down upon the beam from the position represented. The cover is now shutdown and secured by a clasp as represented in Fig. 2, when the scale will occupy very little room in a wagon, and may be transported with safety.

The improvement is applicable to any platform scale, but is applied by Messrs. Howe only to their scale with the chilled friction rollers. It manifestly forms a very compact, convenient and durable scale, and will doubtless be immediately introduced into the army. Measures have been taken for securing a patent for this invention through the Scientific American Patent Agency, and further information in relation to it may be obtained by addressing Frank E. Howe, 203 Broadway, New York.

Massachusetts Manufacturing Items.

The Lyman Mills of Holyoke commenced running again on the 30th ult. The mill has on hand a large stock of cotton, purchased before the war broke out, which, if sold in the bale at the present market price, would afford a handsome dividend to its stockholders, but the directors deem it best for the interest of the town of Holyoke and of all parties that it should be manufactured into cloth.

The Columbian Mill at Southbridge is now running on full time, and employs fifty hands. The mill contains fifty looms and 2,368 spindles, and there is four months' supply of cotton on hand.

The Fall River (Mass.) *News* says the Linen Mill is running three days per week. The Metacomet Mill will resume operations on Monday, Oct. 7, and will also run for three days each week. It is reported that both these mills will run until their present stock of cotton is exhausted.—Boston *Commercial Bulletin*.

THE street railways in London are said by the *Mechanics' Magazine* to have been quite successful, but some of the rich bankers, especially the millionaire Hope, are opposed to the innovation. They have become favorites of the people however, and are bound to triumph over all the opposition of narrow-minded men,

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Scientific American

MUNN & COMPANY, Editors and Proprietors.

PUBLISHED WEEKLY

At No. 37 Park-row (Park Building), New York.

O. D. MUNN, S. H. WALES, A. E. BEACH.

TERMS—Two Dollars per annum.—One Dollar in advance, and the emainder in six months.

Single copies of the paper are on sale at the office of publication, and t all the periodical stores in the United States and Canada.

Sampson Low, Son & Co., the American Booksellers, No. 47 Ludgate Hill, London, England, are the British Agents to receive subscriptions for the SCIENTIFIC AMERICAN.

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VOL. V. NO. 15.....[NEW SERIES.]....*Seventeenth Year.*

NEW YORK, SATURDAY, OCTOBER 12, 1861.

INFORMATION AS TO THE PATENTABLE NOVELTY OF INVENTIONS.

The list of claims published from week to week in these columns, indicate truthfully the extent of business being transacted at the Patent Office.

It will be observed that inventors are far from being dormant, if they are not as numerous and active, as they were a year ago. Since the first of July we have received a great accession to the subscription list of this journal, and for the information of each, we would state that it is the custom, at the office of this paper, to examine models or drawings and descriptions of alleged new inventions, and to give written or verbal advice as to their patentability, without charge. Persons having made what they consider improvements in any branch of machinery, and who contemplate securing the same by Letters Patent, are advised to send a sketch or model of it to this office. An examination will be made and an answer returned by early mail. Through our Branch Office, located directly opposite the Patent Office in Washington, we are enabled to make special examinations into the novelty and patentability of inventions. Having the records of the Patent Office to search, and the models and drawings deposited therein to examine, we are enabled to give an inventor most reliable advice as to the probabilities of his obtaining a patent, and also as to the extent of the claim that it is expedient to set up when the papers for an application are prepared. For this special examination at the Patent Office we make a charge of Five Dollars. It is necessary that a drawing and description or a model of the invention should accompany the remittance. Address—

MUNN & Co., No. 37 Park-row, New York.

COMMISSIONERS TO THE WORLD'S FAIR.

The President of the United States has announced the appointment of the following Commissioners to represent the interests of American exhibitors at the Exhibition of the Industry of all Nations to be held in the City of London, September, 1862. The Commissioners are William H. Seward, Secretary of State; Caleb B. Smith, Secretary of the Interior; Edward Everett, of Massachusetts; Joseph Henry, of the Smithsonian Institution; Robert B. Minturn, of New-York; J. Dawson Coleman of Pennsylvania; John H. Kliphart, of Ohio; James R. Partridge of Maryland; B. P. Johnson, of New-York; Richard Wallack, Mayor of Washington; W. W. Seaton, of Washington; Joseph C. G. Kennedy, Superintendent of the Census Bureau.

So far as the *personnel* of the Commission is concerned no objection can be offered; but the appointments of Secretaries Seward and Smith on the Commission strikes us with some surprise, and suggests a possible change in the Cabinet. It may be, however, that these distinguished gentlemen are appointed for the purpose of securing governmental coöperation at home, which is certainly very important. Some people begin to think that if the President desires merely a change in his Cabinet the sooner he gets about making it the better, and not wait till 1862.

Edward Everett, as an orator and statesman, will form a splendid element in the Commission, as upon all occasions his felicitous speeches will shed lustre upon it. No man in England can match this distinguished citizen in the grace and beauty of his oratorical efforts. Mr. Everett's speeches will go far to compensate for paucity of display in the amount of American contributions—a thing that is highly probable.

Joseph Henry is a distinguished physicist: profoundly versed in all the more abstruse and difficult sciences. He understands watchmaking, also mathematics, electricity, magnetism, meteorology, and kindred sciences, and can write as profoundly on these topics as any other man. He will therefore do for that branch.

Col. Johnson we can cordially endorse. We recommended him long ago to the President as a suitable man for the Commission. Long Secretary of the N. Y. State Agricultural Society, he thoroughly understands this important branch of industry, and can render important service as an international juryman. Oratory and fine arts, watchmaking, or, more scientifically speaking, horology and electricity, agriculture and horticulture, are thus well represented on the Commission.

Mr. Kennedy will also do good service in taking the census and gathering up statistics about population. He may be able to dissect an Englishman who is piously *horrified* every time he thinks of civil war in America, and gather up other facts concerning the science of life and the increase of the human race. The Commission therefore up to this point has splendid material.

Robert B. Minturn is a highly-honored shipping-merchant of this city. Mayor Wallack and Mr. Seaton, of Washington, are knights of the quill. Mr. Wallack knows something about Virginia farming, not very profitable just now, owing to the prevalence of a shinplaster fever. The other gentlemen we have not the honor of knowing, but dare say they possess all the grace and quality of sober citizens.

The Commission, however, it strikes us, is not a "complete turn out." We miss the sturdy man who is to grapple with mechanical and engineering departments, wherein, no doubt, the exhibition will be incomparably rich, and wherein the great mass of our countrymen are most deeply concerned.

When the American Exhibition took place Queen Victoria appointed as Commissioners Joseph Whitworth, the celebrated machinist of Manchester, to report on machinery, and George Wallis on manufacturing and the decorative arts. Their reports were valuable, and afforded the British public a clear insight into the condition of mechanical and manufacturing industry in this country. Such men are wanted in our Commission to the next World's Fair—men who can enlighten us on these subjects, for they are more important to us now than any other branches. At the time of the French Exhibition in 1855, the Government did nothing to encourage the Commissioners, and they could do but little on their own account. The British Exhibition is to be officially recognized; therefore, we hope the President will not overlook one of the most valuable advantages to be gained from it, viz.: a thorough examination and report upon the manufacturing and mechanical details of the Great Exhibition.

ENGLISH IGNORANCE AND INSOLENCE.

In spite of the facility of ocean steam navigation and the constant intercommunication between the United States and Great Britain, the English people somehow seem determined to maintain a sad ignorance respecting matters in this country. One of the worst features of the case is the apparent stupidity of the English press, so that it is no special wonder the people are ofttimes found committing egregious blunders. Not long ago a distinguished lawyer doing business in London, called on the American Consul residing in that city, and asked the latter if he would attend to sending out a commission to have some testimony taken in America, and upon receiving an affirmative reply, the lawyer asked the Consul if it would be convenient for a witness to come into New York from Santa Fé, to give in his deposition. The learned counsel" was dumbfounded when he learned for the first time that Santa Fé was three thousand miles from New York, and not, as he had supposed, a mere suburb of the city.

The British press, able as it confessedly is, has shown an amazing amount of ignorant bluster in reference to the civil war now unhappily prevailing here. The British people are thus grossly deceived in this matter, and are led to range themselves on the side of the rebellion. They accuse us now of having sympathized with Russia during the struggle of that empire with the "Allied Powers." They also accuse us of coldness toward their government in its attempts to suppress the great rebellion in India. In reference to the first position, our government, it is true, refused to allow enlistments to be carried on here. This was right and proper; had it pursued a different course it would have assumed the grave responsibility of allowing warlike operations against a friendly power to proceed on our soil—a thing that could not be allowed for one moment. But so far as our sympathies were concerned, they were generally in favor of the success of the Allies. In reference to the East Indian rebellion, the sympathies of our people were almost entirely on the side of the British government; the Christian public, especially, were intensely anxious to see the mutiny crushed forever. We understood that with England it was mainly a matter of commercial importance; nevertheless we all desired to see the rebellion effectually put down. Since the breaking out of the Southern rebellion against our government, it has seemed to us as though the powers of darkness had seized the British press, so persistent has it been in misrepresenting the principal material facts in the case. It is impossible to expose all its falsehoods which are working detriment to the cause of our government, but we notice one statement in the London *Post* of Sept. 10, which is on a par with the general intelligence and kindly spirit of the British press in reference to affairs here.

If we desire, says the *Post*, the organ of the Prime Minister,

to sum up for the benefit of Mr. Bright and his supporters the practical result of American democracy, that result would be irresponsible military tyranny, the suspension of the *habeas corpus* act, the stifling of the press and the wholesale introduction of a system of passports and spies. In fact, more outrages have been perpetrated upon individual liberty in the Northern States than even King Bomba attempted to commit in Naples. The proclamation of martial law in New York is not only an evidence of national rottenness and decay, but shows how, in the moment of disaster and dismay, a subservient and excited population may surrender all the freedom and liberty for which they have contended during nearly a century.

We have lived in New York a good many years, and this is the first time we have ever heard of "the proclamation of martial law" here. This babbler of the *Post* is either a knave or a fool, possibly a mixture of both, or he would not publish such infamous libels upon our people as appears in the above paragraph. The government has arrested comparatively few persons for the *high crime of treason*, and in every case where the proof was found insufficient to sustain the charge, the person so arrested has been promptly discharged. The British government has banished those who sought to free Ireland from a hated domination, and yet when the government of the United States seeks to sustain itself from overthrow, and arrests the traitors, it is branded as worse than King Bomba's. We venture to say that if the defunct Derby Ministry, after having been fairly voted out of power, should seek to overthrow the government of Great Britain by menacing London and setting up a new government in revolt, somebody would be arrested, and blood would be shed in torrents. We have read the history of England, and we vainly attempt to recall an instance where its government did not earnestly fight all who dared to come against it. Now, for mercy's sake! what crimes have we committed that we should be denounced so unsparingly for seeking even by war, to suppress an infamous rebellion?

If there are not unworthy motives at the bottom of these persistent misrepresentations against us and our government, then we confess ourselves sadly deceived.

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SINGLE AND DOUBLE CYLINDER ENGINES.

Several years ago, what are called "Woolfe engines" created a considerable sensation in the engineering world. They consisted principally of two cylinders combined in one engine, the steam being admitted into one and worked at full stroke, then exhausted into the second (twice the size of the first), where it was worked expansively. It was contended that such engines were far more economical than those having single cylinders; but they never found much favor with American engineers, who held to the reasonable dogma that steam could be worked just as profitably in one cylinder as in two. One of our North river boats was fitted up with double cylinder engines about eighteen years ago, but as a general rule, the opinions of our engineers were much against them. The double pistons required, together with their necessary connections, were held to be useless consumers of power by the extra friction which they caused; and, besides this, the original cost was greater than the single cylinder. Such has been the condition of affairs in this relationship on this side of the Atlantic, but the case has been quite different on the other side of it. Double cylinder engines have continued in use to a considerable extent in England for quite a number of years, and some conspicuous engineering establishments have obtained quite a high reputation for building them. The economy of some of these engines, as it respects fuel, has lately been a very common theme of praise in some of our transatlantic cotemporaries, and yet we have never until now been able to obtain data of their operations so as to make a fair comparison between them and others. The question, which is one of great importance to engineers, has had considerable light thrown upon it by a correspondent of the London *Engineer* of August 20th.

He states that two auxiliary screw steamers, the *Dom Pedro* and the *John Bell*—the latter running between Glasgow and Quebec—were fitted in 1856 with double cylinder engines, which, in the short space of four years became so worn out that they were held to be useless. They were taken out and replaced with single cylinder engines, the *Dom Pedro* getting in new boilers, but the *John Bell* retaining the old ones. Now mark the results. With the double cylinder engines the speed of the former steamer was six and a half knots per hour; the consumption of coals was seven tuns per day. With the new engines, the speed has averaged eight and a half knots per hour, with the consumption of only six tuns of coal per diem. The *John Bell*, however, affords the fairest comparative test, as it has the old boilers. The average speed of this vessel with the old double cylinder engines was seven knots per hour, with a consumptiom of fifteen tuns of coal per day. With the new single cylinder engines, the speed was eight and one-fourth knots per hour across the Atlantic, with only thirteen and one-third tuns of coal per day. The gain of speed with the new engines is remarkable, being no less than thirty knots per day, and this with a great reduction of fuel.

On page 16, Vol. II. (old series), Scientific American, a correspondent made the inquiry: "Has any one tried double and single engines with the same boilers and machinery, so as to give a fair decision which used the least steam?" He stated that his own opinions were in favor of the single cylinder, but he had no practical data to solve the question. In an answer it was then stated that we were destitute of recorded experiments with the two classes of engines. We now have it in the above, and it will no doubt be carefully weighed and appreciated by all who are interested in steam engineering.

HIGH PRESSURE ENGINES IN ENGLAND.

One of the most remarkable movements going on in the industrial world at the present time is the rapid extension in the use of high pressure engines in England. Ocean-going steamers are carrying pressures of 120 and 130 pounds to the inch, and the *Engineer* considers these engines just as safe as the low-pressure engines which have been heretofore in almost universal use. In theory no reason can be assigned why high-pressure engines should be more dangerous than those of low pressure, provided the diameter of the boiler is reduced to correspond with the increased pressure. A boiler two feet in diameter with 100 pounds pressure to the square inch will have no greater strain tending to rupture any portion of it than a boiler six feet in diameter with 33 pounds pressure to the inch. This is all perfectly simple and is generally understood, but there are mysterious influences in boiler explosions which cause these conclusions of theory to be contradicted by experience. The two systems—of high and low pressure—have been tried in this country on a very large scale and through a long series of years, and the opposite results are very marked. The steamboats on our eastern waters have been almost universally propelled by low pressure, or condensing engines, while those on the Mississippi and its tributaries have been as generally driven by non-condensing, or high-pressure engines. It is well known that explosions on the eastern waters are almost, if not wholly, unheard of, while the occurrence of these awful disasters upon the western waters very frequently sends a thrill of horror through the world.

The diameters of the boilers at the West are so reduced that the usual strain upon the boiler plate is no greater than it is at the East, but the mysterious cause of explosions, whatever it may be, seems more liable to be developed at high than at low pressures. It is easy to see that the most common cause of explosions—the water getting low in the boiler—would be more active at high pressure than at low. The high temperature which accompanies high pressure, would more quickly heat the plates red hot, and produce that sudden evolution of steam on the the injection of water, which has probably caused a large majority of the explosions. We shall be surprised if a general employment of high pressure steam in England does not lead to an increase in the number of explosions.

NEW DUMMY LOCOMOTIVE.

For two weeks past, what is called a "dummy engine" has been employed occasionally by the Hudson River Railroad Company for drawing cars between the depot in Chambers street and the locomotive station at Thirty-third street, this city. The object of it is to substitute steam power for horses in passing through the streets of the city. The appearance of the "dummy engine" is like that of a baggage car with the top of a vertical boiler and chimney projecting through the roof. In principle it is a condensing locomotive engine with the machinery boxed in. The object in using a condensing locomotive for drawing the cars through the streets, is to obviate the noise of the exhaust in the smoke-pipe common to high pressure locomotives. It is well known that the open exhaust has a tendency to frighten horses in the street, hence, by exhausting the steam into a condenser, the engine becomes a "dummy." We saw this engine draw nine freight cars one day last week, a feat that would require nine teams of horses.

We consider that a steam engine is more safe than horses for drawing cars at a moderate speed through streets, and it appears to us that a condensing engine, for such a purpose is not absolutely necessary. The more simple high-pressure locomotive may be safely employed, we believe, without creating a stampede among the cart and carriage horses passing along the streets.

A few years since a "dummy engine," built by Mr. Henry Waterman, was used for some time on this railroad and for the same purpose. It was the first of its class so far as we know. The present "dummy" is the production of Messrs. Buchanan & Smith, principal engineers of the Company. It embraces some novel and good features in such a class of engines, and thus far has given the utmost satisfaction. At some future period, after it has been tried still further, we will give more particulars respecting its construction and performances.

SCIENCE IN THE SCHOOLS.

On our correspondence page will be found a communication with the above heading, from A. W. Sprague, of Boston. Mr. Sprague is a Lecturer on Science, and it will be seen that his communication is an advertisement of his business, far more valuable to him than if it were inserted in our advertising columns, where it would cost him some twenty or thirty dollars. Notwithstanding this we give the letter an insertion, as we fully agree with its sentiments, and believe their dissemination a service to the community.

There is no more absolute waste of a child's time and faculties, no more effectual mode of confusing and destroying his intellect, than by setting him to study astronomy, chemistry, physiology, or—worst of all—philosophy, from a dry and abbreviated text book. On the other hand, there is nothing that so awakens, delights and gratifies the ever restless curiosity and thirst for knowledge with which all children are born, as the successful illustration of the great truths of nature by means of appropriate apparatus.

We think that Mr. Sprague has entered upon an exceedingly useful occupation, and it is with no small satisfaction that we give him our aid in the prosecution of his labors.

How a Man feels Under Fire.

The Philadelphia *North American* says:—

How a man feels when in battle is a question that our volunteers have doubtless frequently asked themselves. We yesterday stumbled upon a volunteer on furlough, who first smelt powder at Bull Run. During an hour's chat with him he gave us a very good general idea of the way in which a man feels when under an enemy's gun. Our friend didn't claim to be especially courageous. He placed due value upon the integrity of the American eagle, but enlisted mainly because he had no other employment at the time. He did camp duty faithfully, aud endured the hardships of long marches without any special grumbling. That he dreaded to confront the enemy he freely admits. While willing at any time to kick a bigger man than himself under justifiable provocation, he disliked the idea of the sudden sensation imparted by a bayonet thrust in the abdomen, while only second to this was his horror of being cut down with a rifle ball like an unsuspecting squirrel.

When his regiment was drawn up in line he admits his teeth chattered and his knee pans rattled like a pot-closet in a hurricane. Many of his comrades were similarly affected, and some of them would have lain down had they dared to do so. When the first volley had been interchanged, our friend informs us, every trace of these feelings passed away from him. A reaction took place, and he became almost savage from excitement. Balls whistled all about him, and a cannon shot cut in half a companion at his side. Another was struck by some explosive that spattered his brains over the clothes of our informant, but, so far from intimidating, all these things nerved up his resolution. The hitherto quaking civilian in half an hour became a veteran. His record shows that he bayoneted two of his rebel enemies and discharged eight rounds of his piece with as decisive an aim as though he had selected a turkey for his mark. Could the entire line of an army come at the same time into collision, he says there would be no running except after hopeless defeat.

The men who played the runaway at Bull Run were men who had not participated in the action to any extent, and who became panic stricken where, if once smelling powder in the manner above described, they would have been abundantly victorious. In the roar of musketry and the thundering discharge of artillery there is a music that banishes even innate cowardice. The sight of men struggling together, the clash of sabers, the tramp of cavalry, the gore-stained grass of the battle-field, and the coming charge of the enemy dimly visible through the battle smoke—all these, says our intelligent informant, dispel every particle of fear, and the veriest coward in the ranks perhaps becomes the most tiger-like. At the battle of Bull Run the chaplain of one of the regiments, a man of small stature and delicate frame, personally cut down two six feet grenadiers in single combat. If these things are so—and we incline to think they are—the best cure for cowardice is to crowd a man into a fight and there keep him. The fugitives from Bull Run were men who imbibed panic before it could have reached them.

Operations on Enfield Rifles.—A correspondent of the London *Mechanics' Magazine*, states that in the completed Enfield rifle there are 61 different parts, and in the production of these parts and finishing one rifle 800 different machines are used. About 350 rifles are finished per day, and 2,000 operatives are employed. One out of every four rifles is fitted with a sword bayonet, the rest with the common musket bayonet. Some of Terry's breech-loading carbines are being made at present for cavalry at Enfield.

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Distilling Coal---Manufacturing Gas.

Three patents have lately been taken out in England, very original in their character and apparently important in their adaptation to distilling cannel coal for obtaining gas. Two of these patents have been obtained by Mr. J. Leslie, of which the following is the substance :—

First, heretofore, in manufacturing gas from coal and other bituminous mineral substances, it has been usual to subject them to the process of destructive distillation, and then purify the gas. This improvement in the manufacture of gas from cannel coal and other mineral bituminous matters capable of affording paraffine, consist in subjecting such matters to distillation at low temperatures, in order to obtain the products distilled over in a condensed liquid form, then remove the ammonia, sulphur, and other impurities, and then subject the purified liquids to destructive distillation.

Mr. Leslie prefers to use a cylindrical retort heated externally by a fire and made to revolve slowly. Into this the coal or bituminous mineral is introduced, broken up into small pieces, and the products evolved pass off to the condensing apparatus, which is constantly kept cool by water, while the condensed hydrocarbon products are received into a suitable receiver or vessel. Care is taken to keep down the heat of the retort, in order to prevent the production of gas or vapors which will not condense, the object being to obtain only fluid hydrocarbons by the first process of distillation. When using the better classes of cannel coal, the hydrocarbons obtained may at once be employed for the manufacture of gas, but when using hydrocarbons which have nitrogenous and sulphur compounds combined therewith, these are purified in the following manner.

To remove the nitrogen the crude hydrocarbons are washed with acid ; dilute sulphuric acid will answer the purpose, but dilute muriatic acid is preferable, prepared by adding five gallons of water to one gallon of the concentrated muriatic acid of commerce ; the hydrocarbons are then agitated violently with this diluted acid, using 15 gallons of the diluted acid to every tun of the oil. The mixed hydrocarbons and acid are then allowed to stand for twelve hours, at a temperature of 90° to 100° Fah., and then the layer of acid liquor which has separated is drawn off. To free the hydrocarbons from sulphur compounds, the patentee uses at the rate of 1 lb. caustic soda with one gallon of water, and from 14 to 30 gallons of such solution will be found sufficient to purify a tun of the hydrocarbon fluid. For this purpose the solution is well stirred into the hydrocarbons, and then allowed to settle for some hours, when the purified hydrocarbons may be readily drawn off from the impurities. In order to convert the hydrocarbon liquid or crude oil into illuminating gas, it is caused to drop into a retort or vessel heated to a good red heat, and the gas is conveyed from the retort into gasometers of the ordinary construction, from which the illuminating gas is supplied to the gas mains, as gas has heretofore been supplied from gasometers.

The second patent is chiefly for the purification of the gas. The gas is conducted from the retort into a chamber, which has a valve in it, instead of conducting it to the hydraulic main in the common way. In this chamber there is kept a pile of wood shavings saturated with a solution of the sulphate of copper. The gas, in passing through this, has all its impurities removed.

The third patent is that of W. M. Williams, which is directly opposite in its nature, so far as it relates to the distillation of the coal, and yet both methods may be great improvements in making gas over the modes commonly practiced. It consists in distilling the coal first at a heat much higher than is now used, and at a very great pressure.

The patentee employs a distillatory apparatus, made of cast or wrought iron, and consisting essentially of two vessels connected by a pipe, one of which constitutes a retort and the other a receiver. The retort is set in a furnace, and the receiver is immersed in water or otherwise kept cool. The retort has an opening, at which the material to be operated upon is introduced, and the residuum removed, and the receiver has an opening from which the products obtained are removed. Both the openings are provided with covers for closing them hermetically. At the receiver, is a safety valve, for permitting the escape of gaseous matter when the pressure in the interior of the apparatus reaches the required maximum. As soon as the retort is charged, all the openings in the distillatory apparatus are securely closed, excepting the safety valve, which is loaded to the greatest pressure to which it is wished to subject the contents of the retorts. The retort is then rapidly raised to, and maintained at, a red heat, until volatile products cease to pass off. The gaseous matter first produced accumulates in the apparatus, and by the pressure it exerts determines the formation of a larger proportion of solid and liquid hydrocarbons than is obtained under the pressure of the atmosphere only. The excess of permanent gas formed escapes at the safety valve. It is preferred to distill the coal or other bituminous mineral at a temperature higher than that which it would be desirable to employ if the distillation were conducted under atmospheric pressure only ; the pressure being increased according as the temperature of the retorts is raised. The adjustment between the temperature and pressure is obtained by means of a small aperture formed by partially closing a stop-cock fixed on any convenient part of the distillatory apparatus. The stop-cock is closed so far, that the gas evolved at a full red heat from the coal shall not be able to escape through the stop-cock unless it passes out with the velocity acquired by a pressure equal to about twenty atmospheres, or three hundred pounds on the square inch. Any increase of temperature is attended by an increased evolution of gas, and a consequent increase of pressure, and any diminution of temperature is attended by a corresponding diminution in the production of gas, and the pressure becomes correspondingly diminished.

The subject of "gas light" is of very general interest, and any improvement whereby gas can be obtained at less cost to consumers should receive attention. The first patent of Mr. Leslie may almost be considered as the application of coal oil to the manufacture of gas. As the petroleum oil of Pennsylvania wells is very low in price at present, it may be economical to use it as a substitute for coal in making gas. The suggestion is worth a trial by some of our gas companies.

Magic Mirrors and Burning Lenses.

The famous mirror which Ptolemy Evergetes caused to be placed in the Pharos at Alexandria belongs to the first class. This mirror is stated by ancient authors to have represented accurately everything which was transacted throughout all Egypt, both on water and on land. Some writers affirm that upon its surface an enemy's fleet could be seen at the distance of of 600,000 paces ; others say more than 100 leagues ! Albulfeda, in his description of Egypt, states this mirror to have been of "Chinese iron," which Buffon considers to mean polished steel ; but a writer in the *Philosophical Magazine*, 1805, supposes the metal to have been *tutenag*, a Chinese metallic compound, capable of receiving the highest polish. The existence of Ptolemy's mirror has, however, been generally treated as a fiction ; but Father Abbat, in his *Amusemens Philosophiques*, first published at Marseilles in 1763, considers that it may have been at the time the only mirror of its kind, and being a great wonder, its effects may have been greatly exaggerated, making allowance for which, nothing remains "but that at some distance, provided nothing was interposed between the objects and the mirror, those objects were seen more distinctly than with the naked eye, and that with the mirror many objects were seen which, because of their distance, were imperceptible without it."

It is certain that, under some circumstances, objects may be seen at a much greater distance than is generally supposed. Thus, it is stated that the Isle of Man is clearly visible from the summit of Ben Lomond, in Scotland, or 120 miles distant. Brydone states that from the summit of Etna mountains 200 miles off may be distinguished ; and during his visit to Teneriffe in 1856, Mr. Piazzi Smyth saw objects at a much greater distance.

Burning mirrors have been celebrated on account of their size and extraordinary effects. One of these optical machines was the work of Stettala, a canon of Milan ; it was parabolic, and, acting as a burning glass, inflamed wood at the distance of 15 or 16 paces. Leonard Digges, in his "Pantometria," 1571, states that "with a glasse framed by a revolution of a section parabolicall, I have set fire to powder half a mile and more distant." In the prosecution of this subject, the celebrated Napier and Sir Isaac Newton experimented with parabolic reflectors before 1673. Vilette, an artist and optician of Lyons, constructed three mirrors about the year 1670 ; one of these, which was purchased by the king of France, was 30 inches in diameter and of about 3 feet focus. The rays of the sun were collected by it into the space of about 1 inch. It immediately set fire to the greenest wood ; it fused silver and copper in a few seconds, and in one minute vitrified brick and flint earth. A mirror, superior even to these, was constructed by Baron von Tchivnhausen about 1687 ; it consisted of a metal plate twice as thick as the blade of a common knife ; it was 5 feet 3 inches in breadth, and its focal distance was 3 feet 6 inches. It produced the following effects : Wood exposed to its fucus immediately took fire, copper and silver passed into fusion in a few minutes, and slate was transformed into a kind of black glass, which, when laid hold of with a pair of pincers, could be drawn out into filaments. Pumice-stone and fragments of crucibles, which had withstood the most violent furnaces, were also vitrified.

The burning lens constructed by Mr. Parker many years ago, at an expense of upwards of £7,000, was of flint glass, 3 feet in diameter, and weighed 212 lbs. ; the focal length being 6 feet 8 inches, and the diameter of the focus 1 inch. To concentrate the rays still further, a second lens was used and reduced the diameter of the focus to half an inch. Under this lens every kind of wood took fire in an instant, whether hard or green, or even soaked in water. Thin iron plates grew hot in an instant and then melted. Tiles, slates and all kinds of earth were instantly vitrified. Sulphur, pitch and all resinous bodies melted under water. Fir wood exposed to the focus under water did not seem changed, but when broken, the inside was burned to a coal. Any metal whatever inclosed in charcoal melted in a moment, the fire sparkling like that of a forge. When copper was melted and thrown down quickly in cold water, it produced so violent a shock as to break the strongest earthen vessels, and the copper was entirely dissipated. Though the heat of the focus was so intense as to melt gold in a few seconds, yet there was so little heat at a short distance from the focus that the finger might be placed an inch from it without injury. Mr. Parker having put his finger at the focus to try the sensation, found that it did not resemble that produced by fire or a lighted candle, but like that of a sharp cut with a lancet.

Manufacture of Phosphorus on a Large Scale.

In the London *Chemical News* it is stated that M. Cari-Montrand, has turned to industrial account the scientific fact, long since enounced, of the decomposition, under the influence of an elevated temperature, of dry phosphate of lime mixed with carbon, by means of hydrochloric acid, as a means of manufacturing phosphorus on a large scale.

Calcined bones, reduced to a fine powder, are mixed with a quantity of pulverized wood-charcoal sufficient to convert all the oxygen of the tri-basic phosphate of lime into oxyd of carbon. The mixture is placed in cylinders of refractory clay, glazed on the interior, and fills about three-fourths of their capacity. These cylinders are made red hot, and then a current of hydrochloric acid is passed in at one extremity.

Under these circumstances the phosphate of lime is immediately decomposed, and chloride of calcium, oxyd of calcium, hydrogen and free phosphorus are formed. This latter is distilled, and by means of a copper tube dipping into a vessel of cold water, it is condensed together with some oxyd of carbon, hydrogen, and the excess of the hydrochloric acid gas.

MICROSCOPIC PHOTOGRAPHY.—Professor Gerlach, of the Univesity of Erlangen, has obtained some photographs of microscopic objects by a new method, which consists in taking the object itself as the negative image, and then taking a magnified positive of this image, and repeating the operation, alternately positive and negative, until an image is obtained of such a size as to present details of structure far exceeding in magnitude those obtainable by the most powerful microscopes at present in use.

MOUNT VESUVIUS has began again to emit smoke, rumble and show decided signs of coming eruption. Professor Palmieri, Director of the Neapolitan Observatory, is in daily expectation of something turning up.

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Shifting Valves by Steam.

The Philadelphia *Ledger* has the following account of some novel arrangements in steam engines :—The two side wheel iron steamers, built by Neafie & Levy, and recently purchased by the government to be used for transport vessels, will sail in a few days, from this port to enter upon duty for the government. These steamers were constructed with regard to speed, and their engines are designed to consume a very small amount of coal, and to this end they combine one or two peculiarities not heretofore adopted, to any extent, in American steamboat practice. One of these novel arrangements, is the apparatus for working the valves by hand, or rather by steam, independently of the eccentrics ; to do this, the rocker arm is prolonged considerably below the pin to which the eccentric rod hooks on, and another pin is fitted in the end of this prolongation. When the eccentric rod is unhooked from the main pin, another rod is hooked to the pin below. The other end of this rod is connected to a piston in a small horizontal steam cylinder. The piston rod, coming out of this cylinder, takes hold also of one end of a short link, the upper end of which is pointed to a valve stem, working a small slide valve on the top of the steam cylinder. A hand lever, in the engine room, connects to a horizontal bar, the further end of which is jointed to the link just described, and near its connection with the valve stem of the small slide valve. By this hand lever, the slide valve may be moved in either direction, whatever may be the position of the piston in the small cylinder, and if the latter be already in motion, the link will be vibrated, on the joint in the end of the hand rod, and the valve shifted before the piston has moved too far, and lifted either of the main valves too high. This arrangement is not complicated, and it is very convenient and effective. Another novelty, is a peculiarity of the injection. Instead of a perforated strainer plate, which, by its repeated expansion and contraction, often breaks and falls down in the condenser, a conical deflector is employed to diffuse the jet. This deflector is much the same as that employed in a locomotive spark arrester, and is fixed to the roof of the condenser. The seven-inch injection pipe comes up concentrically under this deflector, its mouth flaring outward, to assist the dispersion of the water.

New Composite Metal for Dies, Matrices and Types.

On page 30 of our present volume, we stated in answer to a correspondent, that we had never seen dies made of any other metal than steel for stamping metal plates, and that no other metal but steel will stand the severe pressure to which such dies are subjected. We have received a letter from Messrs. Smith & Stein, of Philadelphia, in which it is stated, that they have lately engaged in the manufacture of dies, moulds, embossing plates and type (and all similar articles universally made of steel) of a new composition of metal, invented by J. G. Smith, and patented Sept. 20, 1859. This composition, while it is said to be as hard as steel in its natural state becomes quite soft under a certain mode of treatment, when a perfect impression can be taken by it of "the most delicate engraving." The composition dies, we are informed, have been purchased for the use of the Mint in Philadelphia, by James Ross Snowden, Esq., Director.

The patent of Mr. J. G. Smith as originally granted on the above date, is for "the discovery of rendering a composition or alloy of copper and tin pliable, and in such a state as to admit of an easy impression of any figure or design, on or in metal, whether engraved or produced by electro-plating, such as the copy of any figure or design," and that it thus yields a perfect matrix. The patent was reissued April 10, 1860, with three claims, in one of which it is stated that the alloy of copper and tin used becomes soft and almost wax-like at a red heat, in which condition it is used for the production of the articles we have specified. If such dies are in all respects equal to expensive steel dies, this is certainly a most valuable discovery. We scarcely expected that dies rivaling those made of steel could have been made from a plastic metal.

Professor Graham, of the English Mint, has shown that phosphorreted hydrogen, though not spontaneously inflammable of itself, becomes so when brought into contact with a small quantity of nitric acid.

The Tools Great Men Work with.

It is not tools that make the workmen, but the trained skill and perseverance of the man himself. Indeed it is proverbial that the bad workman never yet had a good tool. Some one asked Opie by what wonderful process he mixed his colors. "I mix them with my brains, sir," was his reply. It is the same with every workman who would excel. Ferguson made marvelous things—such as his wooden clock, that actually measured the hours—by means of a common penknife, a tool in everbody's hand, but then everbody is not a Ferguson. A pan of water and two thermometers were the tools by which Dr. Black discovered latent heat ; and a prism, a lens, and a sheet of pasteboard enabled Newton to unfold the composition of light and the origin of color. An eminent foreign *savant* once called upon Dr. Wollaston, and requested to be shown over his laboratories, in which science had been enriched by so many important discoveries, when the Doctor took him into a little study, and, pointing to an old teatray on the table, containing a few watch-glasses, test-papers, a small balance, and a blow-pipe, said : "There is all the laboratory I have !" Stothard learned the art of combining colors by closely studying butterflies' wings : he would often say that no one knew what he owed to these tiny insects. A burnt stick and a barn door served Wilkie in lieu of pencil and canvas. Bewick first practiced drawing on the cottage walls of his native village, which he covered with his sketches in chalk ; and Benjamin West made his first brushes out of the cat's tail. Ferguson laid himself down in the fields at night in a blanket, and made a map of the heavenly bodies by means of a thread with small beads on it, stretched between his eye and the stars. Franklin first robbed the thunder-cloud of its lightning by means of a kite made with two cross-sticks and a silk handkerchief. Watt made his first model of the condensing steam engine out of an old anatomist's syringe, used to inject the arteries previous to dissection. Gifford worked his first problem in mathematics, when a cobbler's apprentice, upon small scraps of leather, which he beat smooth for the purpose ; while Rittenhouse, the astronomer, first calculated eclipses on his plow handle.

Resins, their Solvents and Varnishes.

Resins are vegetable exudations of various plants and trees. They are frequently at first combined with some volatile or essential oil, and are then known as balsams, a common example of which, considerably used in different departments of photography, is the balsam of fir, or Canada balsam. Resins are of various colors, generally more or less transparent, somewhat brittle, having a smooth conchoidal fraction. They melt with heat, and are mostly inflammable, burning with a dense flame, and emitting a more or less aromatic odor. They are insoluble in water, but either entirely or partially soluble in essential oils, ether, alcohol, and the various hydrocarbons. Some acids, strong alkaline solutions, and fixed oils, have also the property of dissolving many resins.

Fossil resins, such as amber, are supposed to be the remains of antedeluvian plants. Gum resins, such as myrrh and aloes, are natural combinations of gums and resins, and are partially soluble, both in water and alcohol.

Resins are chiefly valuable from their use in varnishes, and in proportion as they are transparent, hard and tough. Those chiefly used are lac, amber, sandarach, copal, animi, benzoin, dammar and mastic. Some of these are wholly, and others partially, soluble in alcohol, essential oils and camphor being frequently added to assist their solubility. Those least soluble in alcohol are generally entirely soluble in chloroform or benzole. Those soluble in alcohol form varnishes, which generally require the aid of heat to enable them to dry bright and transparent ; whilst those soluble in chloroform and benzole dry without the aid of heat, without showing any tendency to "bloom" or "chill." Amongst those used with the latter solvents are amber and dammar, and sometimes animi and copal. The resins chiefly used in spirit varnishes are lac and sandarach. The layer of resin left by spirit varnishes is generally less tacky, and less friable than that given by other varnishes.

It is something singular to relate that cotton is coming from Liverpool to New York, two hundred and fourteen bales having arrived last week.

Fairbairn on Patent Laws.

In the last issue of the Scientific American we presented some extracts from the able address of W. Fairbairn, Esq., before the meeting of the British Scientific Association. The following is another paragraph taken from it, on the important subject of patent laws :—

I must not sit down without directing attention to a subject of deep importance to all classes—namely, the amount of projection inventors should receive from the laws of the country. It is the opinion of many that patent laws are injurious rather than benefical, and that no legal protection of this kind ought to be granted ; in fact, that a free trade in inventions, as in everything else, should be established. I confess I am not of that opinion. Doubtless there are abuses in the working of the patent law as it at present exists, and protection is often granted to pirates and impostors to the detriment of real inventors. This, however, does not contravene the principle of protection, but rather calls for reform and amendment. It is asserted by those who have done the least to benefit their country by inventions that a monopoly is injurious, and that, if the patent laws are defended, it should be, not on the ground of their benefit to the inventor, but on that of their utility to the nation. I believe this to be a dangerous doctrine, and I hope it will never be acted upon. I cannot see the right of the nation to appropriate the labors of a lifetime, without awarding any remuneration. The nation, in this case, receives a benefit ; and assuredly the laborer is worthy of his hire. I am no friend of monopoly, but neither am I a friend of injustice ; and I think that before the public are benefited by an invention, the inventor should be rewarded either by a fourteen years' monopoly, or in some other way. Our patent laws are defective, so far as they protect pretended inventions ; but they are essential to the best interests of the State in stimulating the exertions of a class of eminent men, such as Arkwright, Watt and Crompton, whose inventions have entailed upon all countries invaluable benefits, and have done honor to the human race. To this association is committed the task of correcting the abuses of the present system, and establishing such legal provisions as shall deal out equal justice to the inventor and the nation at large.

These remarks of the venerable Fairbairn, the most distinguished mechanical engineer now living, are intended as a rebuke to Sir William Armstrong in his late unreasonable and wanton attack on the system of granting patents. "Mr. Fairbairn," says the the London *Mechanics' Magazine*, "has always borne the reputation of an honest man, who would not appropriate, without payment, the fruits of other mens' labors, or by any means pilfer or pirate inventions. Sir William Armstrong has been justly charged with using the patents or inventions of Blakely, Whitworth, Krupp and others without scruple, or even the polite "thank you, sir" of the highwayman of former times.

Thus stands the question of patents or no patents. On the one side intelligence and honesty ; on the other ignorance—for it is so evident that Sir William Armstrong and the writer of the *Times* who endorsed most of his opinions, and also their imbecile assistant in the columns of a weekly paper, are entirely unacquainted with our patent laws, that it is a waste of time and space to reason with them. We advise those who cry out "no patents" to read once the statute of James I.—so often referred to—a statute, as Coke says, "forcibly and vehemently framed for the suppression of all monopolies."

How to Measure Coal.—Coal put into bins and leveled can be measured, from one to a thousand tuns, with as much accuracy as it can be weighed on scales. For instance, Lehigh white ash coal per tun of 2,000 pounds, of the egg or stove size, will uniformly measure 34½ feet cubical, white ash Schuylkill coal will measure 35, and the pink gray and red ash will reach 36 cubical feet per tun of 2,000 pounds, or 40 feet for 2,240 pounds, the difference of cubical contents between the net and gross tun being exactly four feet. If the length, breadth and hight of the bin be multiplied together, and the product divided by the aforesaid contents of a tun, the quotient must show the number of tuns therein.

Cast-iron Nails.—*Le Génie Industriel* says that cast-iron nails are extensively used in England, and that they are found to rust much less rapidly under the influence of the atmosphere than ordinary nails, or even than those made of copper. They are used especially in making roofs for manufactories which produce gases that corrode common wrought iron. The nails, after being cast from very hot metal in sand molds, are made malleable by being exposed to a red heat for 72 hours in refractory retorts containing pulverized oxyd of iron and sawdust, and then allowed to cool slowly.

The telegraph to the Pacific is now completed from New York to within 24 miles of Salt Lake City.

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SSUED FROM THE UNITED STATES PATENT OFFICE
FOR THE WEEK ENDING SEPTEMBER 24, 1861.
Reported Officially for the Scientific American.

PATENTEES, READ THIS.

The new Patent Laws which went into force on the 2d of March last, authorized the Commissioner of Patents to have all the specifications which form part of the Letters Patent printed.

This is a wise provision, and it renders the documents much handsomer than the old system of engrossing them on parchment; besides, in passing before the printer and proof-reader, the clerical errors, which were often made by the copyist, are mostly obviated, thus rendering the patent more likely to be correct.

But to afford the printer and proof-reader an opportunity to do their work properly, the Patent Office is obliged to withhold the Letters Patent after granting them, for about *four weeks* after the claims are published in the SCIENTIFIC AMERICAN.

*** Pamphlets giving full particulars of the mode of applying for patents, under the new law which went into force March 4, 1861, specifying size of model required, and much other information useful to veators, may be had gratis by addressing MUNN & CO., Publishers f the SCIENTIFIC AMERICAN, New York.

2,322.—C. F. Abright and L. Burkhand, of Pottsville, Pa., for Improvement in Removable Carriage Fronts:

We claim the hinged or folding movable front for carriages, dispensing with aprons, constructed and operating as set forth and for the purposes described.

2,323.—John Adams, of Monroe, Mich., for Improvement in Harrows:

I claim the employment of keys, G G G, constructed substantially as described, in combination with a triangular harrow made up of frames A B C, jointed together and otherwise constructed as and for the purposes described.

[This invention is an improvement in triangular harrows, which are made up of three triangular frames jointed together in such a manner that they will rise and fall, and accommodate themselves to inequalities in the surface of the ground over which they are dragged.]

2,324.—Ethan Allen, of Worcester, Mass., for Improvement in Revolving Fire Arms:

I claim the lever, K, when applied to the extreme front of the frame, A, so that the thumb will operate on it and the pin, D, at the same time, substantially as specified.

2,325.—G. D. Arrington, of Charlestown, Mass., for Improvement in Knapsacks:

I claim the peculiar method of cutting and folding the matertal from which the body of the knapsack is made, as described, and for the purpose substantially as set forth.

2,326.—S. S. Bartlett, of Woonsocket, R. I., assignor to himself and T. H. Dodge, of Washington, D. C., for Improved Mortising Machine:

I claim the combination of the stat onary slide piece, I, movable sliding fulcrum piece, H, with the frame, A, and operating lever, L, and spindle, I, arranged to operate substantially as and for the purposes set forth.

2,327.—Jehu Brainerd, of Cleveland, Ohio, for Improvement in Process of Coloring Skins and Leather:

I claim the use of the protochloride of iron in combination with tannin, substantially as and for the purpose specified.

2,328.—J. W. Briggs (assignor to himself and Kyse Smith), of Cleveland, Ohio, for Gate or Door Spring:

I claim the combination of the bed plate, I, friction roller, G, cover, A, strap, F, coiled spring, E, and drum, B, constructed as described, with the stationary shaft, C, and projecture, N, on bed plate, I, and hub, V, on the inside of drum, B, for the purposes set forth

2,329.—Charles Brodie, of New York City, for Improvement in Machinery for Cleaning Vegetable Fibers:

I claim, first, The combination of the combs and the scrapers, supported by a spring or springs, for the purpose set forth.

Second, The combination with those scrapers and combs of the cam, g, to operate upon the scrapers and cause them to act substantially as specified.

Third, The combination with those combs and movable scrapers of the cleaning board or stationary scraper, k, for the purpose of cleaning the movable scrapers.

Fourth, I claim said two pairs of feeding rollers, one pair running faster than the other, in combination with the combs and movable scraper, for the purpose and substantially as specified.

2,330.—A. H. Brown (assignor to James Burton), of Albany, N. Y., for Improved Machine for Turning Ovals:

I claim, in combination with the driving spindle, A, slide, E d, and adjustable ring, G, of an eccentric lathe, the arrangement of the arms, b, extending on opposite sides from the face plate, a, and forming with the same the concentrically rotating balance frame, D, considerably exceeding in length and weight that of the slide, E, which carries the work, the whole being constructed and operating in the manner and for the purpose described.

[This invention consists, first, in arranging that portion of the faceplate which turns in a true circle around the center of the lathe-spindles, and which forms the ways for the eccentric attachment on the outside of said eccentric attachment, in such manner that the portion of the rotary body which turns in a true circle around the center of the lathe-spindles, describes a larger circle and consequently moves quicker than those parts to which an eccentric motion is imparted, thereby enabling the momentum of that portion which turns in a true circle to overcome the momentum of the eccentrically-moving parts, and to deaden the side strain and the shaking motion produced in ordinary eccentric lathes by the eccentric motion of the faceplate and the work attached to it. Second, in the arrangement on the face of the eccentrically-moving slide of two blocks, which can be expanded by means of a wedge, so that they serve to fasten the work to the faceplate in a simple and expeditious manner. Third, in arranging the ring, which produces the eccentric motion of the faceplate on a dovetailed slide, moving in a corresponding circle on the side of the lathehead, so that the same can be easily adjusted to the desired eccentricity.]

2,331.—Patrick Burke, of Helena, N. Y., for Improved Method of Setting Posts:

I claim the employment of the different materials named for planting posts, when used in the successive order specified, and in connection with the foundation, as set forth.

2,332.—C. F. Campbell (assignor to himself and Joseph Smethurst), of Chenango, N. Y., for Improvement in Machine for Hulling, Cleaning and Grinding Grain:

I claim, first, The arrangement of the bed-stone, having a dress substantially as described, in combination with the adjustable runner, having reciprocating motion.

And in connection therewith I claim, second, the receiver, e, with the fan blower and the exits, as recited.

2,333.—George Cary, of Cleveland, Ohio, for Improvement in Process of Manufacturing White Lead:

I claim subjecting metallic lead placed in a room or chamber made and kept tight throughout the process, as specified, to the action of aqueous and acetic acid vapors conjointly and continuously with carbonic acid gas, until the process is completed in the manner substantially as and for the purpose set forth.

2,334.—W. T. Cole, of Reed, Ohio, for Improved Approach Opening Gate:

I claim the combination of the cams, 1 1, with the slides, 7 7, and the shafts, 8, and the gate or gates, 2 2, when combined and operated substantially as set forth.

2,335.—William Dennis, of Providence, R. I., for Improvement in Composition for Soap:

I claim the soap made of curd soap, bichromate of potash, water, muriatic acid, palm oil or tallow stalk and oxyd of manganese, as shown and described.

[This invention consists in the use of black oxyd of manganese in the mottling operation, whereby a soap of superior depurating quality s obtained, and which, in the washing of colored or printed goods, will not make the colors run, but have the effect of fixing them more permanently, and leaving them bright and clear.]

2,336.—A. T. Dunshee, of McKeesport, Pa., for Improvement in Water Filters:

I claim the perforated bottoms, n and g, filtering cloth, f, and openings, m and l, when used in connection with the triple strata of charcoal prepared and proportioned as set forth.

2,337.—Chas. R. Folger, of Cincinnati, Ohio, for Improvement in Loop Catches for Sewing Machines:

I claim the adjustable loop check, A b c, formed of an elastic metallic bar and constituting its own spring, and so constructed and applied in connection with the rotating hook, B, as to rest against a portion of the periphery of the said hook with a yielding pressure and at the same time resist the vertical strain of the loop, all as shown and explained.

2,338.—A. Forrist and C. A. Wheeler (assignors to themselves, W. H. Goudy and Henry Rogers), of Mount Vernon, Iowa, for Improvement in Boot Patterns:

I claim the connecting of the pieces, A A O P, of the several patterns, by means of the parallel arms, C C′ C″ Q, attached to sliding strips, B B′ R, in connection with the traverse guide pieces, D D′ L S S′, toe-pieces, H, and counter-pieces, M, the latter named parts being arranged and applied to their respective patterns, as shown, the whole forming a new and improved combination of patterns for the purpose specified.

2,339.—Thomas Garrick, of Providence, R.I., for Improvement in Knapsacks:

I claim, first, Combining and arranging a knapsack, canteen and haversack, in the manner substantially as described.

Second, I claim making the sides of a knapsack, in such manner that they can be folded together, substantially as described, for the purposes specified.

2,340.—G. W. B. Gedney, of New York City, for an Air Gun:

I claim, first, The combination of the parts, as described.

Second, I claim the valve made as described and acting by its own adhesion.

Third, I claim the bag or pouch, made from india rubber, gutta percha, or any flexible air-tight material, for the purpose of projecting light articles, or metal shot, and to be compressed either by the hand or otherwise as fully described and set forth.

2,341.—R. D. Granger, of Albany, N. Y., for Improvement in Stoves:

I claim, first, The arrangement of the flues set forth, in combination with a magazine or base-burning stove, substantially as described.

Second, The arrangement of the air tubes or chambers in their relation to each other and to the fire box and throat of the fire box, as described.

Third, The bed plate in combination with the grates.

Fourth, The magazine, substantially as it is constructed and arranged in relation to the inclined surfaces of the fire box and to the other parts of the stove.

2,342.—A. L. Haskill (assignor to himself and E. H. Ashcroft), of Boston, Mass., for Improvement in Tents:

I claim the arrangement of the pulley in the center pole, as described, for the purpose of raising and lowering the tent, the same being constructed and operated substantially as set forth.

2,343.—Rufus Haven, of Perrysville, Ind., for Improvement in Moth Traps for Bee Hives:

I claim the vertical Tube, H, and the hemisphere, G, in combination with the moth compartments and the entrances thereto, arranged substantially in the manner and for the purposes set forth.

2,344.—H. Q. Hawley, of Albany, N. Y., for Improved Meter for Water Gas, &c.:

I claim, first, Combining the piston or diaphragm of a fluid meter with weighted levers or tumbling bars for operating the inlet and outlet valve or valves thereof, by means of a rod, I, and chains, H H′, applied to operate substantially as specified.

Second, The employment in a fluid meter of a system of valve-operating mechanism in which weighted levers or tumbling bars arranged within the meter are first brought by the movement of the piston or diaphragm to a position or condition to exert upon the valves a tendency to reverse their position, but not to move them until they have been started by the direct action of the piston or diaphragm in its further movement, and then caused to suddenly complete the movement of the valves, substantially as described.

2,345.—J. R. Hendrickson, of McKeesport, Pa., for Improved Fire-place:

I claim the arrangement of the air chambers, m n and e, the narrow air-passage, b, and draft chamber, t, when used in combination with the ordinary fire grate, as described, for the purpose set forth,

2,346.—B. J. La Mothe, of New York City, for Improvement in Metallic Cars for Railroads:

I claim, first, The employment of pipes or tubes for forming the ribs or framing of a railroad car or other vehicle when the same are strengthened at the parts where bent by bars or pipes, as set forth.

Second, I claim the combination of the aforesaid ribs (formed of pipes) with bands running longitudinally to the car, or with the beam of beams, d, as set forth.

Third, I claim the metallic clamps or collar, h o r i, applied at the intersections of the bands or ribs, as set forth, for binding the parts together, and avoiding the perforation of the bands themselves for the introduction of rivets or bolts, as specified.

2,347.—R. H. Lecky, of Allegheny City, Pa., for an Improved Machine for Drilling Oil Wells:

I claim, first, The use of drop, p, having a revolving and perpendicular motion, and used in combination with the self-acting catches, t, and tripper, r, as described and for the purpose set forth.

Second, The use of the revolving slides, m, when used in connection with the drop, p, or the equivalent of said drop, as described and for the purpose set forth.

Third, The arrangement of the rod, 7, tripper, r, butments, 4, sliding head, n, and rods o and 8, when used in combination with the drop, p, and revolving slides, m, as described and for the purpose set forth.

2,348.—Joel Lee, of Galesburg, Ill., for an Improved Washing Machine:

I claim the arrangement of the box, A, the roller frame, C, the rollers, D D D, the arms F and E, the spring K, and the arm J, the several parts being constructed and operating as and for the purpose specified.

2,349.—Joel Lee, of Galesburg, Ill., for an Improved Clothes Dryer:

I claim the employment of the hub, D, shaft, E, arms, A, braces, B, and hollow post, F, arranged as specified, whereby the arms will expand when weight rests upon the lower portion of the hub, and will contract or collapse when weight is transferred to the lower end of the shaft substantially as specified.

2,350.—A. A. Livingston, of Cedar, Rapids, Iowa, for an Improvement in Stirrups:

I claim a saddle stirrup, A, provided with an india rubber or elastic foot-piece, B, substantially as described.

[This invention consists in applying an india rubber foot-piece to a stirrup, whereby the foot is prevented from slipping in the stirrup, an the horse and rider relieved from much of the jarring and jolting tending the use of the ordinary stirrup.]

2,351.—John Maddock, of Dubuque, Iowa, for an Improvement in the Hounds of Carriages:

I claim having the front hound, E, of a wheel vehicle steamed and bent in circular form and applied to the vehicle, substantially as and for the purposes set forth.

[This invention relates to an improvement in the hounds of wheel vehicles, whereby the construction of the running gear of vehicles is greatly facilitated, considerable "stuff" or stock saved and durability increased.]

2,352.—I. F. Maynard, of Nashua, N. H., for an Improvement in Flyers for Spinning Machinery:

I claim the construction of flyers with the left hand screw, whirl attachment, a b c d e, and also the left hand screw adjustable and detachable nose, h i J k, singly or in combination as set forth and described, and as shown in figures 1 4 8 and 9.

2,353.—Duncan McKenzie, of Brooklyn, N. Y., for an Improved Camp Cooking Apparatus:

I claim the combination of the range, A, hot-air chamber, C, tubes or flues, D, and baking oven, F, when arranged as shown to form a new and improved portable cooking and baking device.

2,354.—H. B. Middaugh and Albert Clark, of Mansfield, Pa., for an Improvement in Horse-Power Machine:

I claim the arrangement of the elevated hub, G′, braces, p, and separable segment toothed wheel, G, with each other, and with the centering pin or pivot, c, adjustable lever, J, and supporting wheel, d, all the parts being constructed and operating together in the manner shown and described.

[This invention relates to certain novel improvements in that class of horse-powers wherein a large, rotating tread-wheel is employed, on which the horse steps for transmitting power from the animal to the machinery to be driven.]

2,355.—L. Mishler, of Mogadore, Ohio, for an Improvement in Machine for Loading Hay:

I claim the jointed lever, H, with the piece, J, and Spring, F, with the catch, I, in combination with the brace, G, and fingers, A, the whole being operated by the rope, R, in the manner and for the purpose specified.

2,356.—J. A. Montgomery, of Williamsport, Pa., for an Improved Canteen:

I claim a canteen of any desired form or material, with a funnel or cup fitting it, substantially as described.

2,357.—John W. Newall, of New Brunswick, N. J., for an Improvement in the Manufacture of Elastic Cloth:

I claim an elastic cloth, which is a compound fabric produced by the combination of two sheets of woven cloth obtained by cutting tubular cloth spirally, with a layer of elastic gum (such as india rubber), the combination being rendered permanent by vulcanization, substantially as set forth.

2,358.—Ogden P. Pell, of Flushing, N. Y., assignor to himself and Alfred M. Tredwell, of Madison, N. J., for an Improved Lounge and Camp Stool combined:

I claim the extension center piece, formed of sacking or equivalent material, between two side pieces that are provided with dovetails or other connections at their ends, taking the parts of the camp stools in the manner and for the purposes set forth.

2,359.—Benjamin Reed, of Pittsburgh, Pa., for an Improvement in Washing Machines:

I claim the arrangement of the springs, b and c, and movable journal boxes, a, when used in connection with axle, e, of cylinder, f, arranged, constructed and operated substantially as described and for the purpose set forth.

2,360.—Edward S. Renwick, of New York City, for an Improved Propeller.

I claim the combination of a screw propeller with a r cess in the side of the body of the vessel to which the screw propeller is applied, the propeller revolving partially in said recess, substantially as set forth.

I also claim the combination of a screw propeller, with a chamber upon the vessel's side to contain the pillow block of the propeller shaft, substantially as set forth.

I also claim the combination of a screw propeller with both a recess in the side of the vessel to receive a portion of the propeller, and a chamber upon the vessel's side to contain a pillow block of the propeller shaft, substantially as set forth.

2,361.—Samuel Roebuck, of Brooklyn, N. Y., for an Improved Musquito Bar:

I claim the combination of the folding frame, A, uprights, D, and net, E, arranged and applied to the bedstead as and for the purpose set forth.

[This invention has for its object the combining of a folding top with uprights or supports, in such a manner that a simple and efficient ba or net is obtained for a bedstead, and one which will not require to be suspended from the ceiling, bnt supported solely from the bedstead, and capable of being disjointed and folded compactly when not required for use.]

2,362.—Henry E. Roeder, of New York City, for an Improved Car Spring:

I claim, first, The combination of a number of steel bars of uniform width and of graduated length, with a casing provided with graduated ledges, the whole being constructed and arranged in the manner and for the purpose substantially as specified.

Secondly, I claim the recess, P, in the casing into which the block, D, fits, and whereby the same is guided to prevent any lateral motion of the plates.

2,363.—Benjamin T. Roney, of Bristol, Pa., for an Improvement in Coal Stoves:

I claim, first, The cylindrical fire-pot, G, the cylindrical and grated fire-pot, M, and the internal casing or fuel reservoir, B, when the several parts are arranged in respect to each other substantially as set forth for the purpose of directing the ignited products of combustion laterally through the bars of the said grated fire-pot as set forth.

Second, The arrangement of the air-chamber, b, its opening, t, the fire-pot, G, and ash-pit, a, whereby the air is directed in the first instance against the said fire-pot, thence into the ash-pit and thence through the fuel for the purpose described.

Third, The slides, p, applied to the interior of the fire-chamber, d, and arranged in respect to the mica plates of the door and sides of said chamber in the manner and for the purpose specified.

2,364.—Julia A. Ross, Executrix of James P. Ross, deceased, late of Lewisburgh, Pa., for an Improved Valve Gear for Steam Engines:

I claim the employment in connection with the oscillating yoke, H

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of a spring or springs, J, attached to the yoke and operating in combination therewith, and with the wiper, h, or its equivalent, and the traveler, g, as set forth.

2,365.—William Sherwin, of Shelburn Falls, Mass., for an Improvement in Husking Pins:

I claim a sheet metal husking pin, constructed in the manner set forth, and substantially of the form and possessing the properties described, as a new article of manufacture.

2,366.—William Sisson, of Fulton, N. Y., for an Improvement in Stave Machines:

I claim the rib-guides, d d, arranged in combination with the bed, E, substantially in the manner and for the purpose specified.

I also claim the employment of the strip or strips, g, of wood, inserted with the ends of the grains upward, in a groove of the bed, upon, and in combination with a firm supporting bar, h, which is adjustable up and down by set screws, i i, or their equivalents, substantially as and for the purpose specified.

2,367.—J. Homer Smith, of Brewster's Station, N. Y., for an Improvement in Gun Locks:

I claim, first, The trigger constructed of two pieces, D and d, united with a pin point, f, the said piece, d, having an upward extension above the resting place of the tumbler, substantially as specified.

Second, The combination of the two notches, g and 5, in the separate pieces, D and d, of the trigger and the single tooth h, on the tumbler, substantially as specified, whereby the hammer is allowed to be held cocked by a portion of the hair trigger.

Third, The screws, i and j, applied and operating substantially as described for the purpose set forth.

2,368.—C. Williams and E. F. Falconnet, of Nashville, Tenn., for a Bell Piano:

We claim, first, A musical instrument composed of a set of bells arranged in a number of vertical series, side by side, within a case of the character specified, and having combined with them a system of hammers, dampers and playing keys; this we claim without reference to any particular arrangement or system of hammers and dampers and their operating mechanism that may be employed.

Second, The employment, in combination with an instrument of a pedal or pedals, M M′, combined with a system of dampers by a system of slides, L L′, in the manner substantially as specified.

Third, The employment in combination with the bells, or with any number of the same of a whole or partial double set of hammers, F F′, and double set of jack-levers, H H′, the latter attached to a movable board, K, or its equivalent, combined with a pedal, Q, in such manner as to be movable thereby for the purpose of allowing one or other set of hammers to be played by one set of keys, substantially as specified.

Notes and Queries

F. L., of Ill.—The target of Mr. Ferris' shooting is certainly a good one, but we think it too old to afford interest to our readers They want new things.

W. C. H., of Iowa.—The best way for you to obtain the works you want will be to apply to your member of Congress. The Patent Reports you speak of cannot be procured.

S. S., of N. Y.—We have sent you, by mail, one of our pamphlets of "Advice to Inventors," which will give you all needed advice concerning an application for a patent. It will not invalidate your right to a patent if you sell one of the machines before the patent is secured.

Manufacturers of the *best* horse-power (two) and grain separator, will find a customer in J. M. Neff, Strasburg, Pa.

F. F., of Conn.—Your patent will be mailed to you as soon as it is returned to the Patent Office from the printers. The printing of the specifications is the cause of delay in forwarding the document after the patent issues. Some of the patents issued in July have not been sent to the patentees. Such delays seem unnecessary, but we are assured by the powers that control the Patent Office, and the printing department, that it is; so we suppose inventors must put up with the delay and try and seem patient if they do no not feel so.

F. M., of Ohio.—Steam cannot be compressed into less bulk than the water from which it was generated.

A. B. W., of N. Y.—A conical iron shell for cannon with an expanding lead band on its base, is not new. You will find one of this description illustrated on page 21, Vol. XI. (1855), old series of the Scientific American. The lead band is put on by first zincing the iron, then placing the shell in a mold and casting the lead upon it. This shell is superior to some which have lately been brought before the public.

B. H. M., of N. H.—Your letter states that you have been unable to dissolve india rubber with naphtha—that "the rubber merely swelled." Either the india rubber or the naphtha must have been impure. Perhaps you employed vulcanized india rubber, whereas you should have used the pure "gum" cut into shreds. A gentle heat, with frequent stirring, assists in dissolving the india rubber more rapidly. Gutta percha is soluable in benzole, spirits of turpentine, bisulphide of carbon and chloroform. When dissolved in turpentine it makes a good cement, applied hot, for the soles of boots and shoes, but the soles put on in this manner do not adhere so firmly as those which are fastened by sewing.

H. L. B., of Vt.—Sawing a log by its own weight is not a a feat belonging exclusively to yourself as an inventor. Unless your method is different from the one illustrated on page 92, Vol. XI., (old series) of the Scientifi J American, which represents a log sawing itself up—you may despair of securing a patent.

D. P. L., of N. Y.—Your circular on phonography we think would interest too few of our readers to justify its publication.

W. A. B., of Vt.—Several plans have been patented for preserving the power which a car expends in coming to rest and employing the same power in starting the car. In the back volumes of our paper you will find illustrations of two or three plans.

P. Q. R., of Canada.—Your communication was not received.

L. A., of Mass.—The American Institute is to have no fair this year. The meetings of the the Polytechnic Association will be continued weekly.

J. E. W., of Ky.—The improvement in magneto-electric machines alluded to in our article on "Heating and Lighting Cities by the Power of the Tides," is Beardslee's. We believe that he is not ready to have it illustrated just yet. As soon as the invention is fully matured you will find a description of it in these columns.

W. D. L., of Pa.—The Chief Engineer of the New-York and Baltimore Line (Cromwell's) of steamers, is Mr. J. Baird, who resides in New York.

F. W., of Wis.—Giffard's Injector is manufactured by Messrs. Sellers, Philadelphia.

T. D. B., of Mass.—Holtzapple's Mechanical Manipulations will give you practical instruction in grinding lenses, and in making telescopes. The price of the work is $15. You can get it of Messrs. Bailliere, Brothers, 440 Broadway, New-York. They may have some cheaper work that will answer your purpose, and the maps of the stars that you want, all of which you can ascertain by writing to them.

Money Received

At the Scientific American Office on account of Patent

Office business, during one week preceding Wednesday, Oct. 2, 1861:—

T. V., of Cal., $20; A. S., of N. Y., $40; C. H. S., of N. Y., $25; T. S. B., of N. Y., $50; M. M. & M., of Ohio, $25; W. A. F., of Pa., $25; H. M., of Mass., $15; H. W. M., of N. Y., $15; G. M., of Conn., $28; S. B., of N. Y., $10; H. P., of N. Y., $15; A. W., of Pa., $25; M. D. B., of Ill., $25; W. C., of N. Y., $25; G. & C., of Iowa, $20; A. J. S., of Iowa, $20; J. V. H., of Ill., $25; F. B. S., of N. Y., $100; T. J. P., of Pa., $25; E. M. & J. E. M., of N. Y., $15; E. & W., of N. Y., $15; J. F. B., of Conn., $35; E. C., of Ohio, $25; F. W. S., of Pa., $15; M. P. L., of Maine, $15; T. & Bros, of Conn., $15; K. & H., of Wis., $25; B. & P., of N. Y., $250; E. W., of Conn., $25; W. R. L., of Conn., $15; A. V., J. D., & F. B., of Mass., $98; T. G. B., of Mass., $20; L. & B., of N. Y., $35; J. R., of N. Y., $20; H. W. B., of N. Y. $40; C. E. S., of Md., $25.; J. J. K., of Ill., $25; J. R., of Conn., $15; L. S. C., of N. Y., $25; H & K., of N. Y., $25; A. K. R., of Vt., $15; A. F., of Iowa, $15; W. A. D., of Ill, $25; G. W., of N. Y., $25; G. O. T., of Mass., $25; S. D. T., of Mass., $30; W. F. Q., of Del., $25; C. W. S., of N. Y., $15; G. G. C., of Mich., $45; B. S. C., of N. Y. $20; W. M., of N. Y., $20; J. H. S., of N. Y., $20; S. T. D., of N. J. $15; E. E., of Cal., $15.

Specifications and drawings and models belonging to parties with the following initials have been forwarded to the Patent Office from Sept. 25 to Wednesday, Oct. 2, 1861:—

P. S. B., of N. Y. (2 cases); C. E. S., of N. Y.; J. J. K., of Ill.; W. S., of Pa.; C. H. S., of N. Y.; L. S. C., of N. Y.; W. A. D., of Ill.; J. P. L., of Mass.; M. F., of N. Y.; G. W., of N. Y.,; I. F. B., of Conn.; C. E. P., of Ohio; W. A. F., of Pa.; M. and M., of Ohio; A. S., of N. Y.; G. M., of Conn.; G. O. T., of Mass.; H. W. B., of N. Y.; E. W., of Conn.; W. F. Q., of Del.; M. D. B., of Ill.; A. W., of Pa.; L and V., of N. Y.; A. V. J. D. and F. B., of Mass.

RATES OF ADVERTISING.

Thirty Cents per line for each and every insertion, payable in advance. To enable all to understand how to calculate the amount they must send when they wish advertisements published, we will explain that ten words average one line. Engravings will not be admitted into our advertising columns; and, as heretofore, the publishers reserve to themselves the right to reject any advertisement they may deem objectionable.

INSTRUCTIONS ABOUT EUROPEAN PATENTS.

With a Synopsis of the Patent Laws of some of the Countries.

AMERICAN INVENTORS SHOULD BEAR IN MIND that, as a general rule, any invention which is valuable to the patentee in this country is worth equally as much in England and some other foreign countries. Four patents—American, English, French and Belgian, will secure an inventor exclusive monopoly for his discovery among 100,000,000 of the most intelligent people in the world. The facilities of business and steam communication are such that patents can be obtained abroad by our citizens almost as easily as at home. The majority of all patents taken out by Americans in foreign countries are obtained through the Scientific American Patent Agency. We have established agencies at all the principal European seats of government, and obtain patents in Great Britain, France, Belgium, Prussia, Austria, Spain, &c., with promptness and dispatch.

It is generally much better to apply for foreign patents simultaneously with the application here; or, if this cannot be conveniently done, as little time as possible should be lost after the patent is issued, as the laws in some foreign countries allow patents to any one who first makes the application, and in this way many inventors are deprived of valid patents for their own inventions.

Many valuable inventions are yearly introduced into Europe from the United State, by parties ever on the alert to pick up whatever they can lay their hands upon which may seem useful.

Models are not required in any European country, but the utmost care and experience are necessary in the preparation of each case.

GREAT BRITAIN.

Patents in England under the new law, as amended by the act of Oct. 1, 1852, and now in operation, include the United Kingdom of Great Britain and Ireland in one grant, which confers the exclusive right to make, use, exercise or vend. This is conceded to the inventor, or the introducer, for a period of fourteen years, subject, after the patent is granted, and the first expenses paid, to a government tax twice during its existence—once within three years, and once again within seven. The purchaser of a patent would assume the payment of these taxes.

There is no provision in the English law requiring that a patented invention shall be introduced into public use within any specified limit. Under the Patent Act of October, 1852, the British government relinquished its right to grant patents for any of its colonies, each colony being permitted to regulate its own patent system. If a patent has been previously taken out in a foreign country, the British patent wi expire with it.

FRANCE.

Patents in France are granted for a term of fifteen years, unless the invention has been previously secured by patent in some other country; in which case, it must take date and expire with the previous patent. After the patent is issued, the French government requires the payment of a small tax each year so long as the patent is kept alive, and two years' time is given to put the invention patented into practice.

It should be borne in mind that, although the French law does no require that the applicant should make oath to his papers, yet if a patent should be obtained by any other person than the inventor, upon proof being adduced to this effect before the proper tribunal, the patent would be declared illegal.

BELGIUM.

Patents in Belgium are granted for twenty years, or. if previously patented in another country, they expire with the date thereof. The working of the invention must take place within one year from date of patent; but an extension for an additional year may be obtained on application to the proper authorities. Inventors only are legally entitled to take out patents.

RUSSIA.

Since the close of the Crimean war, considerable attention has been given to Russian patents by Americans. Russia is a country rich in mineral and agricultural products, and there seems to be a field open for certain kinds of improvements. The present Emperor is very liberally disposed toward inventors, and as an evidence of the interest which he takes in the progress of mechanic arts, we may state that we have had visits from two distinguished Russian *savans*, specially sent out by the Emperor to examine American inventions. As Russian patents are expensive, and somewhat difficult to obtain, we do not take it upon ourselves to advise applications; inventors must judge for themselves; and this remark applies not only to Russia, but to all other foreign countries.

CANADA.

Patents of invention are granted only to actual residents of Canada and British subjects. Under the general Patent Law of Canada, an American cannot procure a patent for his invention there. The only way in which he can do so is by virtue of a special act of Parliament, which is very difficult, uncertain, and expensive to obtain. Several zealous friends of reform in Canada are working earnestly to bring about a reciprocal law, but their efforts have thus far proved fruitless.

In addition to the countries above specified, we are prepared to solicit patents in Austria, Prussia, Saxony, Hanover, Norway, Sweden, Australia, British East Indies and all other foreign countries on the most reasonable terms.

GENERAL REMARKS.

While it is true of most of the European countries herein specified, that the system of examination is not so rigid as that practiced in this country, yet it is vastly important that inventors should have their papers prepared only by the most competent solicitors, in order that they may stand the test of a searching legal examination; as it is a common practice for the purchaser of an invention from a patentee to cause such examination to be made before he will accept the title.

It is also very unsafe to entrust a useful invention to any other than a solicitor of known integrity and ability. Inventors should beware of speculators, whether in the guise of patent agents or patent brokers, as they cannot ordinarily be trusted with valuable inventions.

Messrs. MUNN & CO. have been established *fifteen years* as American and Foreign Patent Attorneys and publishers of the Scientific American, and during this time they have been entrusted with some of the most important inventions of the age; and it is a matter of pardonable pride in them to state that not a single case can be adduced in which they have ever betrayed the important trust committed to their care. Their agents in London, Paris, and other Continental cities, are among the oldest and most reliable Patent Solicitors in Europe, and they will have no connection with any other.

Caution.—It has become a somewhat common practice for agents located in England to send out circulars soliciting the patronage of American inventors. We caution the latter against heeding such applications, or they may otherwise fall into the hands of irresponsible parties, and thus be defrauded of their rights. It is much safer for inventors to entrust their cases to the care of a competent, reliable agent at home.

Parties desiring to procure patents in Europe can correspond with the undersigned, and obtain all the necessary advice and information respecting the expenses of obtaining foreign patents.

All letters should be addressed to Messrs. MUNN & CO., No. 37 Park-row New York.

CHANGE IN THE PATENT LAWS.

PATENTS GRANTED FOR SEVENTEEN YEARS.

The new Patent Laws enacted by Congress on the 4th of March, 1861, are now in full force, and prove to be of great benefit to all parties who are concerned in new inventions.

The duration of patents granted under the new act is prolonged to SEVENTEEN years, and the government fee required on filing an application for a patent is reduced from **$30** down to **$15**. Other changes in the fees are also made as follows:—

On filing each Caveat	$10
On filing each application for a Patent, except for a design	$15
On issuing each original Patent	$20
On appeal to Commissioner of Patents	$20
On application for Re-issue	$30
On application for Extension of Patent	$50
On granting the Extension	$50
On filing Disclaimer	$10
On filing application for Design, three and a half years	$10
On filing application for Design, seven years	$15
On filing application for Design, fourteen years	$30

The law abolishes discrimination in fees required of foreigners, except in reference to such countries as discriminate against citizens of the United States—thus allowing English, French, Belgian, Austrian, Russian, Spanish, and all other foreigners except the Canadians, to enjoy all the privileges of our patents system (exceptin cases of designs) on the above terms.

During the last sixteen years, the business of procuring Patents for new inventions in the United States and all foreign countries has been conducted by Messrs. MUNN & CO., in connection with the publication of the SCIENTIFIC AMERICAN; and as an evidence of the confidence reposed in our Agency by the Inventors throughout the country, we would state that we have acted as agents for more than FIFTEEN THOUSAND Inventors! In fact, the publishers of this paper have become identified with the whole brotherhood of Inventors and Patentees at home and abroad. Thousands of Inventors for whom we have taken out Patents have addressed to us most flattering testimonials for the services we have rendered them, and the wealth which has inured to the Inventors whose Patents were secured through this Office, and afterward illustrated in the SCIENTIFIC AMERICAN, would amount to many millions of dollars! We would state that we never had a more efficient corps of Draughtsmen and Specification Writers than are employed at present in our extensive Offices, and we are prepared to attend to Patent business of all kinds in the quickest time and on the most liberal terms.

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Rejected Applications.

We are prepared to undertake the investigation and prosecution of rejected cases, on reasonable terms. The close proximity of our Washington Agency to the Patent Office affords us rare opportunities for the examination and comparison of references, models, drawings, documents, &c. Our success in the prosecution of rejected cases has been very great. The principal portion of our charge is generally left dependent upon the final result.

All persons having rejected cases which they desire to have prosecuted are invited to correspond with us on the subject, giving a brief history of their case, inclosing the official letters, &c.

Testimonials.

The annexed letters, from the last three Commissioners of Patents, we commend to the perusal of all persons interested in obtaining Patents:—

Messrs. MUNN & Co.:—I take pleasure in stating that, while I held the office of Commissioner of Patents, MORE THAN ONE-FOURTH OF ALL THE BUSINESS OF THE OFFICE CAME THROUGH YOUR HANDS. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill and fidelity to the interests of your employers. Yours, very truly,

CHAS. MASON.

Immediately after the appointment of Mr. Holt to the office of Postmaster-General of the United States, he addressed to us the subjoined very gratifying testimonial:—

Messrs. MUNN & Co.:—It affords me much pleasure to bear testimony to the able and efficient manner in which you have discharged your duties of Solicitors of Patents while I had the honor of holding the office of Commissioner. Your business was very large, and you sustained (and, I doubt not, justly deserved) the reputation of energy, marked ability and uncompromising fidelity in performing your professional engagements. Very respectfully,

Your obedient servant, J. HOLT.

MESSRS. MUNN & Co.:—Gentleman: It gives me much pleasure to say that, during the time of my holding the office of Commissioner of Patents, a very large proportion of the business of inventors before the Patent Office was transacted through your agency, and that I have ever found you faithful and devoted to the interests of your clients, as well as eminently qualified to perform the duties of Patent Attorneys with skill and accuracy. Very respectfully,

Your obedient servant, WM. D. BISHOP.

The Examination of Inventions.

Persons having conceived an idea which they think may be patentable, are advised to make a sketch or model of their invention, and submit it to us, with a full description, for advice. The points of novelty are carefully examined, and a reply written corresponding with the acts, free of charge. Address MUNN & CO., No. 37 Park-row, New York.

Preliminary Examinations at the Patent Office.

The advice we render gratuitously upon examining an invention does not extend to a search at the Patent Office, to see if a like invention has been presented there, but is an opinion based upon what knowledge we may acquire of a similar invention from the records in our Home Office. But for a fee of $5, accompanied with a model or drawing and description, we have a special search made at the United States Patent Office, and a report setting forth the prospects of obtaining a Patent &c., made up and mailed to the Inventor, with a pamphlet, giving instructions for further proceedings. These preliminary examinations are made through our Branch Office, corner of F and Seventh-streets, Washington, by experienced and competent persons. Over 1,500 of these examinations were made last year through this Office, and as a measure of prudence and economy, we usually advise Inventors to have a preliminary examination made. Address MUNN & CO., No. 37 Park-row, New York.

Caveats.

Persons desiring to file a Caveat can have the papers prepared in the shortest time by sending a sketch and description of the invention. The government fee for a Caveat, under the new law, is $10. A pamphlet of advice regarding applications for Patents and Caveats furnished gratis on application by mail. Address MUNN & CO., No. 37 Park-row, New York.

Foreign Patents.

We are very extensively engaged in the preparation and securing of Patents in the various European countries. For the transaction of this business, we have offices at Nos. 66 Chancery-lane, London; 29 Boulevard St. Martin, Paris; and 26 Rue des Eperonniers, Brussels. We think we can safely say that THREE-FOURTHS of all the European Patents secured to American citizens are procured through our Agency.

Inventors will do well to bear in mind that the English law does not limit the issue of Patents to Inventors. Any one can take out a Patent there.

Circulars of information concerning the proper course to be pursued in obtaining Patents in foreign countries through our Agency, the requirements of different Patent Offices, &c., may be had gratis upon application at our principal office, No. 37 Park-row, New York, or either of our Branch Offices.

Interferences.

We offer our services to examine witnesses in cases of interference, o prepare arguments, and appear before the Commissioner of Patents, or in the United States Court, as counsel in conducting interferences or appeals.

For further information, send for a copy of "*Hints to Inventors*," Furnished free. Address MUNN & CO., No. 37 Park-row, New York.

How to Make an Application for a Patent.

Every applicant for a Patent must furnish a model of his invention. If susceptible of one; or if the invention is a chemical production, he must furnish samples of the ingredients of which his composition is composed, for the Patent Office. These should be securely packed, the inventor's name marked on them, and sent, with the government fee, by express. The express charge should be prepaid. Small models from a distance can often be sent cheaper by mail. The safest way to remit money is by draft on New York, payable to the order of Munn & Co. Persons who live in remote parts of the country can usually purchase drafts from their merchants on their New York correspondents; but if not convenient to do so, there is but little risk in sending bank bills by mail, having the letter registered by the postmaster. Address MUNN & Co., No. 37 Park-row, New York.

The Validity of Patents.

Persons who are about purchasing Patent property, or Patentees who are about erecting extensive works for manufacturing under their Patents, should have their claims examined carefully by competent attorneys, to see if they are not likely to infringe some existing Patent, before making large investments. Written opinions on the validity of Patents, after careful examination into the facts, can be had for a reasonable remuneration. The price for such services is always settled upon in advance, after knowing the nature of the invention and being informed of the points on which an opinion is solicited. For further particulars, address MUNN & CO., No. 37 Park-row, New York.

Assignments of Patents.

The assignment of Patents, and agreements between Patentees and manufacturers, carefully prepared and placed upon the records at the Patent Office. Address MUNN & CO., at the Scientific American Patent Agency, No. 37 Park-row, New York.

It would require many columns to detail all the ways in which the Inventor or Patentee may be served at our offices. We cordially invite all who have anything to do with Patent property or inventions to call at our extensive offices, No. 37 Park-row, New York, where any questions regarding the rights of Patentees, will be cheerfully answered.

Communications and remittances by mail, and models by express (prepaid), should be addressed to MUNN & CO., No. 37 Park-row, New York.

ALBANY IRON WORKS, TROY, N. Y.—SEMI-STEEL Plates and Forgings.—We are prepared to furnish forged shapes of this approved metal, and without unnecessary delay, having large facilities for production. Among the uses to which this material is now applied, and with great success, we name, rifled cannon for government use; also rifle and musket barrel shapes, locomotive engine tires, locomotive engine axles, straight and crank, car axles, crank pins, plates for locomotive fire box, flue sheets, &c. It is peculiarly adapted for shafting, indeed, for all purposes where strength and rigid qualities are required, its tensile strength ranging from 90,000 to 118,000 lbs. to the square inch, nearly double that of the best iron.—Cast-steel forgings up to 1,500 lbs. each, likewise furnished. Communications addressed to CORNING, WINSLOW & CO., A. L. Works, Troy, N. Y., will be promptly responded to. Parties at the West can be supplied on addressing their orders to A. S. WINSLOW, Cincinnati, Ohio. 15 6m

HOMINY MILLS—EVERY GRIST MILL SHOULD have one.—J. Donaldson's Self-Feeding, Discharging, Separating and Grading Hominy Mill, is the only one in use. It works the corn dry yet hulls it perfectly. It will also hull oats, barley, rice, and split and hull peas. Can be run by horse or steam power, and can be set from one to four horse power. It hulls from 10 to 50 bushels of corn per day; it weighs 300 lbs., occupies a space of three feet square, is not liable to get out of order, and is reliable in every particular. Price of mills at the shop:—Small size, $80; large size, $100. Territorial rights sold low or exchanged for western lands. Address J. DONALDSON, Rockford, Ill. 15 3*

WORTH $5—TO KNOW HOW TO SHOOT AT A mark with both eyes open. Any one can learn to do it. Send by mail 25 cents for instruction. Address G. W. KERSEY, Bartown, Lancaster Co. N. Y. 1*

NONPAREIL WASHING MACHINE.—THIS Machine must take precedence of all other machines now in use, being the only one justly entitled to be considered as constructed on correct mechanical principles. Machines and State and county rights for sale by OAKLEY & KEATING, 73 South street, New York. 15 3m

PATENT RIGHT AND ONE SET OF HALF SIZE machinery for molding water and gas pipe with a cast screw joint will be sold the whole or part on reasonable terms to a good purchaser. Address WILLIAM DOYLE, Albany, N. Y. 1*

PORTABLE STEAM ENGINES—6, 8 AND 10-HORSE at $500, $625 and $780. For sale by S. C. HILLS, No. 12 Platt street, New York. 2e5w

WOODWORTH PLANERS—IRON FRAMES TO PLANE 18 to 24 inches wide, at $90 to $110. For sale by S. C. HILLS, No. 12 Platt-street, New York. 2 1em

HOSTETTER'S BAG HOLDER AND CONVEYER, FOR filling and conveying bags. Price $5. Patent for sale. 13 5* J. R. HOFFER, Mount Joy, Pe.

BRASS LIFT AND FORCE PUMPS, SHIP PUMPS, Steam Whistles, Gage Cocks, Oil Cups, and every variety Brass-Work used by engine builders, manufactured by HAYDEN, SANDERS & CO., 84 Beekman street, New York. 14 13

GUILD & GARRISON'S CELEBRATED STEAM Pumps—Adapted to every variety of pumping. The principal styles are the Direct Action Excelsior Steam Pump, the improved Balance Wheel Pump, Duplex Vacuum and Steam Pumps, and the Water Propeller, an entirely new invention for pumping large quantities at a light lift. For sale at Nos. 55 and 57 First street, Williamsburgh, and No. 74 Beekman street, New York. 9 tf GUILD, GARRISON & CO.

IRON PLANERS, ENGINE LATHES, AND OTHER MAchinists Tools, of superior quality, on hand and finishing, and for sale low; also, Harrison's Grain Mills. For descriptive circular, address NEW HAVEN MANUFACTURING CO., New Haven, Conn. 1 26

OIL! OIL! OIL!—FOR RAILROADS, STEAMERS AND for Machinery and Burning.—Pease's Improved Machinery and Burning Oil will save fifty per cent, and will not gum. This Oil possesses qualities vitally essential for lubricating and burning found in no other oil. It is offered to the public upon the most reliable, thorough and practical test. Our most skillful engineers and machinists pronounce it superior to and cheaper than any other, and the only Oil that is in all cases reliable and will not gum. The SCIENTIFIC AMERICAN, after several tests, pronounces it "superior to any other they have ever used for machinery." For sale only by the inventor and manufacturer,

F. S. PEASE,
No. 61 Main-street, Buffalo, N. Y.

N. B.—Reliable orders filled for any part of the United States and Europe. 14 13

SOLID EMERY VULCANITE.—WE ARE NOW MANUfacturing wheels of this remarkable substance for cutting, grinding and polishing metals, that will outwear hundreds of the kind commonly used, and will do a much greater amount of work in the same time, and more efficiently. All interested can see them in operation at our warehouse, or circulars describing them will be furnished by mail.

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SWISS DRAWING INSTRUMENTS.—CATALOGUE (7TH edition), containing over 250 illustrations of Mathematical, Optical and Philosophical Instruments, with attachment of a large sheet representing the genuine Swiss Instruments, in their actual size and shape, will be delivered on application to all parts of the United States (gratis), by C. T. AMSLER, No. 635 Chestnut-street, Philadelphia, Pa., established agency for the Swiss Drawing Instruments since 1848.

Being about to retire from business, I have sold my stock of Swiss Mathematical Instruments to Messrs. MCALLISTER & BROTHER, of No. 728 Chestnut street, Philadelphia who will continue to keep such for sale, and to whom I refer my former friends and customers

C. T. AMSLER

Philadelphia, Pa., June 12, 1861.

CRUDE PARAFFINE WANTED—FOR WHICH THE highest price will be paid for a good article well pressed. Address H. RYDER & CO., Patent Paraffine Candle Manufacturers, New Bedford, Mass. 12 tf

A MESSIEURS LES INVENTEURS—AVIS IMPORtant. Les Inventeurs non familiers avec la langue Anglaise et qui préféreraient nous communiquer leurs inventions en Français, peuvent nous addresser dans leur langue natale. Envoyez nous un dessin et une description concise pour notre examen. Toutes communications seront reçues en confidence. MUNN & CO.,
SCIENTIFIC AMERICAN Office, No. 37 Park-row, New York.

THE GRAEFENBERG MANUAL OF HEALTH.

This valuable family medical work, containing 300 pages, has been revised and improved, and elegantly illustrated with beautifully colored Engravings of the human system. Sent by mail to any part of the country on receipt of 25 cents. It is a complete guide to all diseases, and their cure.

Address letters to JOSHUA F. BRIDGE, M. D.,
Secretary Graefenberg Co., No. 2 Bond St., New York.

One of the leading New York Journal says:—"The popularity of this admirable and compendious work is well shown by this being the twenty-fourth edition of the Manual It contains a number of colored anatomical plates, and is a complete family physician, the best and most compendious that we have ever seen. Dr. Buchan's famous work is not to be compared in value to this excellent adviser. It is at once simple, popular, plain and explicit; and the mother, with such an adviser, is predared at once to apply the proper remedies in case of sudden attack of sickness in the family. In the country a copy of the Manual of Health is indispensable, and every family should possess one. It will save a hundred times its cost in doctors' bills, and, what is far better, will be the means of preserving many valuable lives to their families and relatives."

LIVE WITHOUT THE DOCTOR

SAVE MONEY AND GAIN HEALTH.—The expense and trouble consequent upon the necessity of employing a physician, is no small item in the yearly calculations of the head of a family.

The most of this, and in fact all, except when serious accidents require surgical operations, or where very violent vital diseases render an occasional call necessary, can be avoided by having the Graefenberg Manual of Health and an assortment of Graefenberg Medicines.

FAMILIES can save large sums in doctors' bills, and avoid much suffering, by using the Graefenberg Medicines and Manual of Health.—*New York Tribune.*

THE Graefenberg Manual of Health, together with their valuable series of Family Medicines, will enable a family to dispense in nine cases out of ten, with the cost of a physician.—*Observer.*

NEARLY fifteen years experience has gained for the Graefenberg Company's Institution the confidence and esteem of the American people, and the combination of professional treatment under the direct supervision of the Medical Board, with the preparation and sale of family medicines under authority of an act of the Legislature of New York, has formed a union of professional practice and commercial enterprise never before witnessed. At the present day the position of the Graefenberg Company's Medical Institute is unparalleled by that of any Public Charity or Medical college in the world.

THE Graefenberg Company wish it to be distinctly understood that their theory and practice is not based upon infallibility. What is claimed, and what is borne out by facts, is that the medicines are the result of the highest medical skill adapted to the compounding of simple and entirely vegetable medicinal preparations. The treatment is the most judicious application of these simple vegetable productions in aid of the great and equally simple laws of nature governing the human system in health and disease. In ninety-nine cases out of a hundred the Graefenberg treatment will certainly cure.

CONSULATE OF THE U. S. OF AMERICA, BOMBAY, Sept., 1860.

This is to certify that I am personally acquainted with J. F. Bridge, M. D., of the city of New York, and that he is a learned and skillful physician of high standing; and further, that I have used the Graefenberg Medicines according to directions given in the Graefenberg Manual of Health, for several years, to my entire satisfaction; and I can confidently recommend them to all who wish to save doctors' bills and enjoy good health.

L. H. HATFIELD,
American Consul, Bombay.

THE Graefenberg Institute combines the sale of medicine, medical advice, and the reception of patients for treatment in the Institute Buildings, No. 2 Bond Street, N. Y. Many of the leading publicmen in the country have spoken in the highest terms of the Graefenberg Institution and its theory and practice. Others who are unacquainted with the medicines, but who are aware of the integrity and truthfulness of the Resident Physician, have permitted him to refer to them for the truth of what he may say. Among these last we have noticed the names of Horace Greeley, of the *Tribune;* Prof. M. P. Jewett, of the Vassar Female College, Poughkeepsie; the Rev. E. H. Chapin, D.D., of New York; Prof. A. P. Peabody, of Harvard University, &c.

WE, the undersigned citizens of the town of Parsia, Cattaraugus County, N. Y., and the town of Collins, Erie County, N. Y., most cheerfully certify that we and our families have used the Graefenberg Family Medicines, and especially the Graefenberg Vegetable Pills, with the most gratifying results. We believe they justly merit the good qualities claimed for them by the Graefenberg Company, and would confidently recommend them to the public.

Signed by Geo. S. Hicker; Thomas J. Parker, physician; Abraham Sucker, farmer; I. P. Rollen, farmer; John Havens, merchant; Ely Page, farmer; Stephen Hooker, farmer; E. J. Goss, drover; G. F. Southwick, farmer; P. Walden, farmer; Wm. Griffiths, butcher; D. Grannis, wheelwright; Edwin P. Daily, builder; H. N. Hooker, merchant, John Barnheart, farmer; E. Van Dorke, cordwainer.

Sworn to before John B. Wilbor, Justice of Peace.

CERTIFICATE FROM THE GOVERNOR OF VIRGINIA.

I, William Smith, Governor of Virginia, certify and make known that Joseph Prentice—who signs a certificate relating to the Graefenberg Vegetable Pills—is the Clerk of the Court of this State. The said certificate embraces the names of the most reliable and responsible people in this community, and certifies to the invariable curative action of the Graefenberg Vegetable Pills, in the following diseases:—

Bilious Complaints, Asthma, Constipation, Dyspepsia, Erysipelas; Low, Nervous and Simple Fevers; Gastric Fevers, Gripes, Heartburn, Headache, Indigestion, Hysterics, Liver Complaint, Nervous Disorders, Neuralgia, Rheumatism, and all diseases arising from want of action in the digestive organs.

And I further testify that full credit and faith are due and ought to be given to said certificates.

In testimony whereof, I have subscribed my name, and caused the Great Seal of the State to be affixed hereunto.

Done at the city of Richmond, the twenty-second day of November, in the year of our Lord one thousand eight hundred and forty-eight, and of the Commonwealth the seventy-third.

WILLIAM SMITH, Governor.

By the Governor, Wm. H. Richardson, Sec. Com. and Keeper of the Seal.

☞ Four boxes of Graefenberg Pills will be sent to any part of the country, without expense, on the receipt of one dollar.

☞ On the receipt of $5, or upward, that amount of Graefenberg Medicine, at retail prices, will be sent to any place in the United States where there is an express line from New York, or from the General Agency, free of charge.

☞ Any of the Graefenberg Medicines, or information regarding the Institute, its terms, &c., may be had by addressing

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New American Cyclopedia, Vol. XIII.

We have received from the publishers, D. Appleton & Co., 443 and 445 Broadway, New-York, the thirteenth volume of this great work, which continues its steady progress, notwithstanding the war. As a specimen of the articles, we give the short one upon "Pickles," some of the statements in which will be found important.

Pickles, vegetables of various sorts, as small cucumbers, onions, string beans, and cabbage, and also some fruits, such as melons, peaches, India mangoes, and soft unripe nuts, are preserved in vinegar to be eaten as a condiment. The articles are steeped or parboiled in brine, and then transferred to the vinegar, to which some salt is added, and to give flavor some of a variety of spices are also introduced, as well as mustard, horse radish, &c. East India pickles are also flavored with curry powder mixed with mustard and garlic. For some articles the vinegar is used cold, for others hot, and for onions pure distilled vinegar is employed, in order that the natural whiteness of these vegetables may be preserved. The use of pickles is so general that they are almost one of the common necessaries of life; and among seafaring men especially their consumption is said to be prodigious. On this account it is a matter of serious consideration, that they are often contaminated with a poisonous salt of copper, which after several receipts given in the cookery books is intentionally introduced for the purpose of giving to the pickles a pleasing bright green color. To obtain this effect the vinegar is boiled in brass or copper vessels, or copper coins are introduced into the boiling liquid, and sometimes verdigris and blue vitriol or the sulphate of copper. This salt is, however, produced by boiling vinegar which contains sulphuric acid in copper vessels, and most of the vinegar that is used in the pickle factories is of this character. Dr. Hassall reports that the samples of pickles examined by him, amounting to 23 in number, all contained copper to some extent, and two or three of them in dangerous quantities. Sulphuric acid also was detected in 19 out of 20 samples of vinegar used for pickling. Numerous fatal cases of poisoning are reported as having occurred from the use of such pickles. The presence of copper may be suspected in all pickles of a brighter green color than the vegetables naturally possess; and it is proved when a bright piece of iron immersed for a short time in the liquid becomes coated with copper; or if, when a bit of the pickles is minced fine and put into a vial with liquid ammonia diluted with an equal amount of water, the liquid becomes blue, it is owing to the presence of copper.

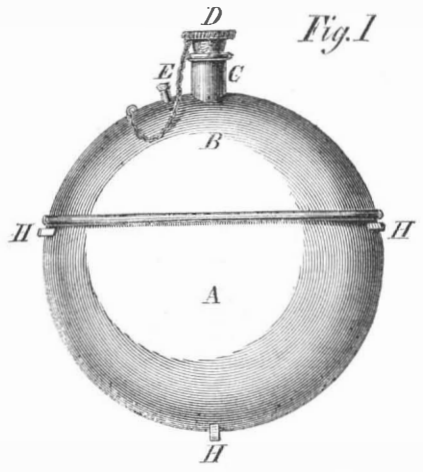
Southern Manufacture of Rifled Cannon.

The war is fast developing the mechanical skill and resources of our people. On Saturday we examined at the foundry establishment of Messrs. Cameron & Co. a beautiful wrought iron 12-pounder rifled cannon, made from original models and under immediate superintendence and direction of the enterpising proprietors. The piece has not as yet been tried, but from its appearance there can be no doubt that it will prove a most efficient weapon for either field or privateering purposes, or in a fortification. It is intended for rapid firing, and can be moved very quickly from place to place. The piece is at the workshops foot of Hazell street, and open to the examination of the public. It will more than repay a visit. We also witnessed in successful operation a percussion cap making machine, capable of turning out from 25,000 to 35,000 caps daily. This machine was invented by that skillfull draughtsman and master mechanic Mr. Taylor, one of the proprietors. Although simple in its operation, much thought and patient perseverance was requisite to bring all its nice combinations to work with accuracy and facility. But the necessities of the State demanded it. Mr. Taylor was furnished by Col. Manigault, Chief of the Ordnance Department, with a strip of copper, a cap and a star cut from the copper to show how the caps were made. Mr. Taylor immediately set to work, and in less than a month's time the machine was in operation. The copper is cut into strips of the proper width and then passed through rollers which form the stars. From that they are carried forward to a die and made into a cap. We would advise the curious, however, and all interested, to see the operation themselves. The proprietors take great pleasure in extending to all visitors every possible facility. A large thirty-two-pounder, recently rifled at the establishment, and designed for Fort Sumter, was also exhibited to us. An attempt at description of this handsome piece of workmanship would only mar the pleasure of an examination. The proprietors have invented a machine for rifling cannon of any size and twist that may be desired, from ten to forty feet. These gentlemen deserve the highest credit for their enterprising spirit and the zeal they have exhibited, to render service to the State at a moment of pressing emergency.—*Charleston Courier, Aug.* 12.

MONTGOMERY'S CANTEEN.

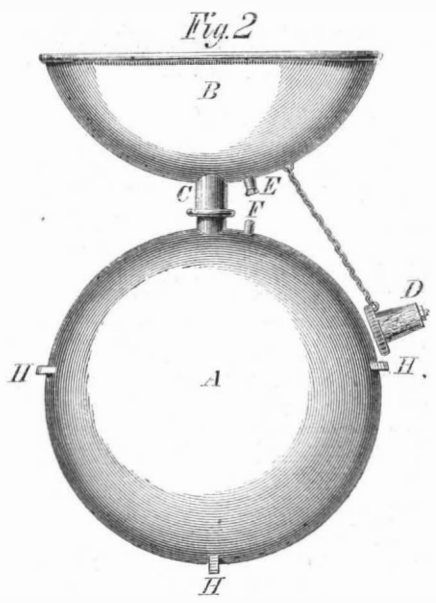
By the neat and simple contrivance represented in the annexed cuts, a tunnel for filling a canteen and an excellent drinking cup are added to the canteen without perceptibly increasing its bulk. Fig. 1 represents the canteen with the cup upon it, Fig. 2 with the cup inserted as a tunnel and Fig. 3 shows the cup detached.

Fig. 1



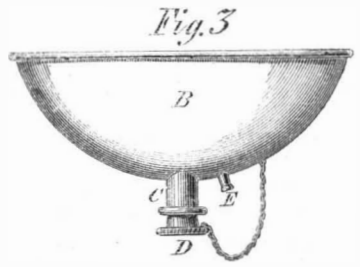
A is the body of the canteen, B the cup or tunnel, C its neck, D the cork with a metallic top, E a cap with a cork in it to stop the vent, F the vent to allow egress of air while the canteen is being filled, and H H H are loops for the strap.

Fig. 2



We are informed that this compact and convenient canteen has been approved by the War Department, and we hope it will be speedily adopted in our army.

Fig. 3



The patent for this invention was granted to J. A. Montgomery, Sept. 4, 1861, and further information in relation to it may be obtained by addressing Schneider and Montgomery, at Williamsport, Penn.

WE HAD HIM THAT TIME.—The following mode of abating a street nuisance ts related by the *Baltimore Clipper*. It struck us as a novel idea, and we hope the editor has taken the proper measures to secure a patent on his discovery: "Thursday afternoon one of those intolerable nuisances, a dirty, greasy, ill-tuned, Italian organ-grinder, halted under our sanctorial window, and began grinding out some lamentable discords. Not caring to waste our nickels upon the 'wandering minstrel,' and wishing to get rid of him as speedily as possible, we threw down to him a circular headed, 'Wanted, Recruits for Capt. Simpson's Company of Home Guard.' In an instant the man of music shut up shop and vacated the premises."

MESSAGES have lately been sent direct, by telegraph, to Taganrog on the sea of Azoff, from the City of London. The distance is 2,500 miles. This is said to be the longest direct communication by telegraph ever achieved, unless we except the messages by the Atlantic cable.

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MUNN & CO., Publishers,
No. 37 Park-row, New York.

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